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INVESTIGATING SCHOOL MATHEMATICS

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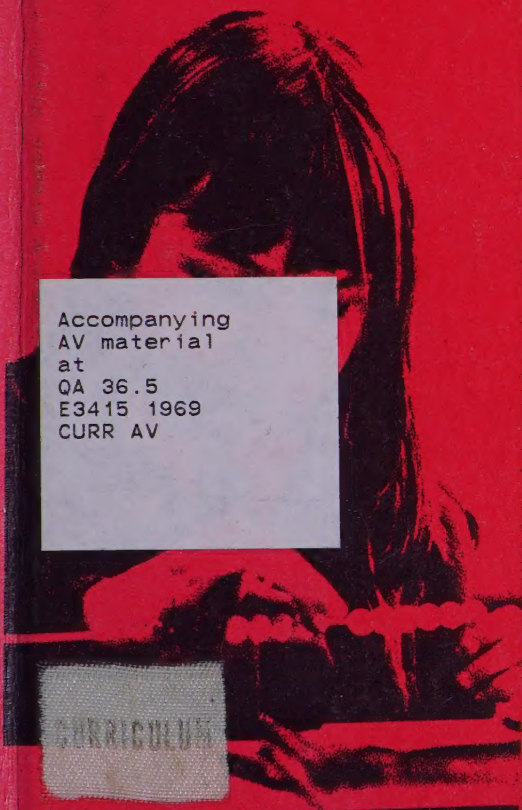


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Investigating School Mathematics

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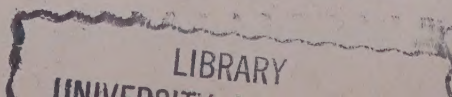


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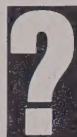


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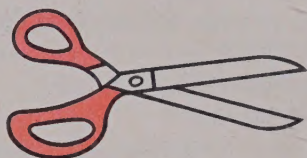
Investigating the Ideas

This is a sample lesson. It will help you understand how you will use your book.

In this part of a lesson there are things for you to **investigate** and discover.



Can you find some Investigations where you would use these objects?



Scissors



Colored strips



Counters

Discussing the Ideas

In this part of a lesson you will **discuss the ideas** you investigated. You will be sharing your ideas with others. You are getting ready to **use the ideas**.

1. Look through your book. Can you explain an easy way to find the "Investigating the Ideas" sections?
2. Can you explain an easy way to find the "Discussing the Ideas" sections in your book?
3. Find a "Discussing the Ideas" section that begins at the top of a page.
4. Find a page called "Keeping in Touch." What do you think this means?

In this part of the lesson you will **use the ideas**. You will work problems to improve your understanding of the ideas you have discussed. Try these.

1. How many "Investigating the Ideas" sections are in Chapter 4?
2. Find the number of "Discussing the Ideas" sections in Chapter 6.
3. How many "Using the Ideas" sections are in Chapter 8?
4. Look up *prime numbers* in your index. What page numbers are given?

Problems in these boxes are a **special challenge** for you. Be sure to try some of them. See if you can do this one.



think



The faces of a block are numbered from 1 to 6. What is the sum of the numbers you cannot see?

Counting and Measurement

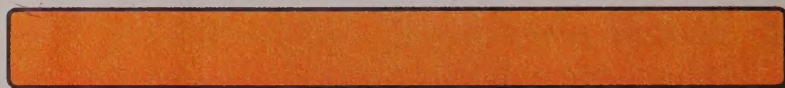
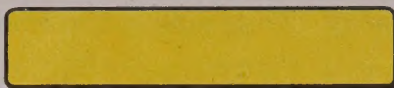
● *Can you measure by counting?*

Investigating the Ideas

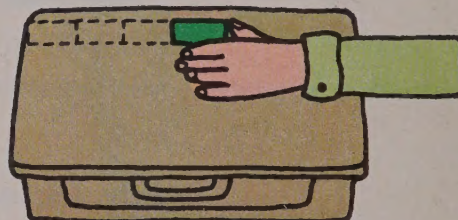
Choose one of your colored strips.



Count how many times you have to put your strip down to move it across your desk top.



Can you use one of your strips to measure some other parts of your desk?



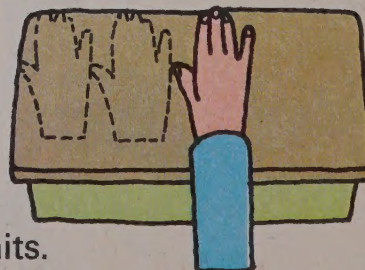
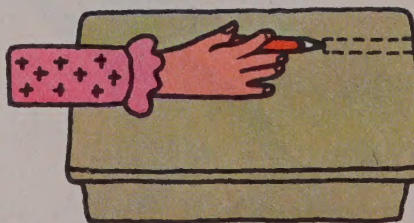
Discussing the Ideas

1. How did you use your strip to measure your desk?

2. Jane said, "My desk is about 4 pencils wide." What did Jane mean?

3. How many hands wide is your desk?

4. Objects used for measuring are called units. What are the three units used so far in this lesson?

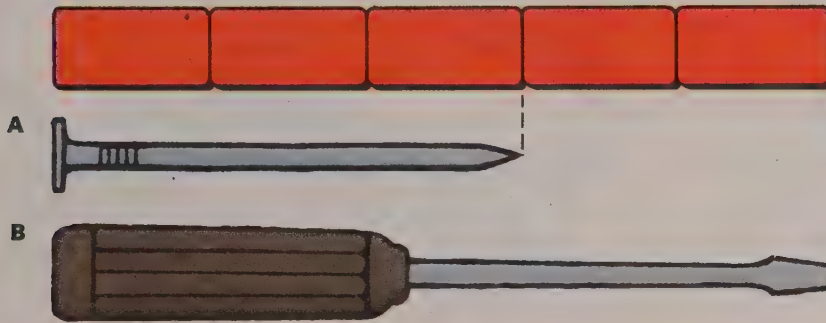


Using the Ideas

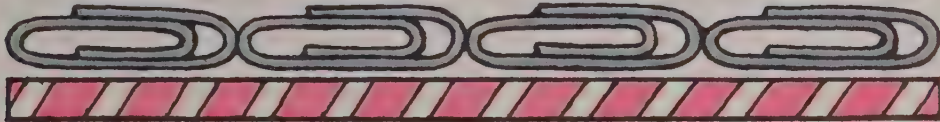
1. Count the number of strip units for the measure of each object.




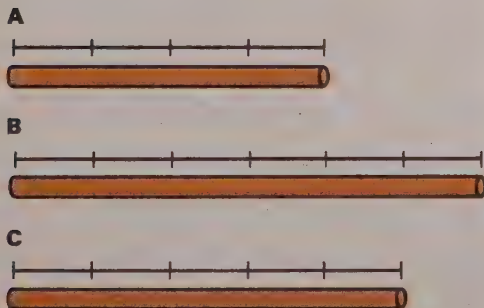
2. How many strip units long is each object?



3. How many paper clip units long is the straw?

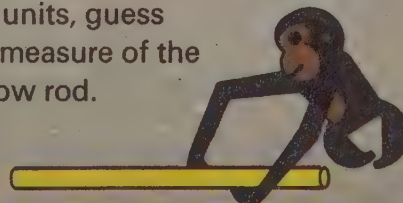
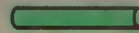


4. Count the  units to measure each rod.



think

If the measure of the green rod is 6 units, guess the measure of the yellow rod.

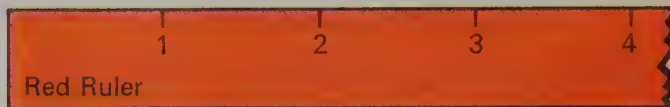


Investigating the Ideas

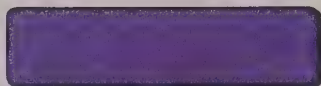
Each of these rulers uses a different strip as unit.



RED STRIP



Red Ruler

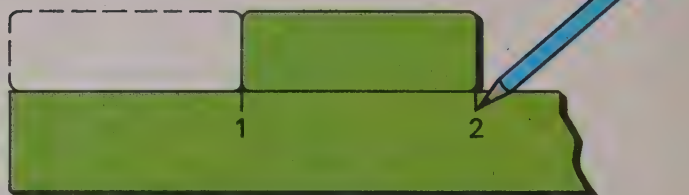


PURPLE STRIP



Purple Ruler

Cut a long strip of paper.
Choose one of these
strips and make
a ruler as shown.



Making a Light Green Ruler

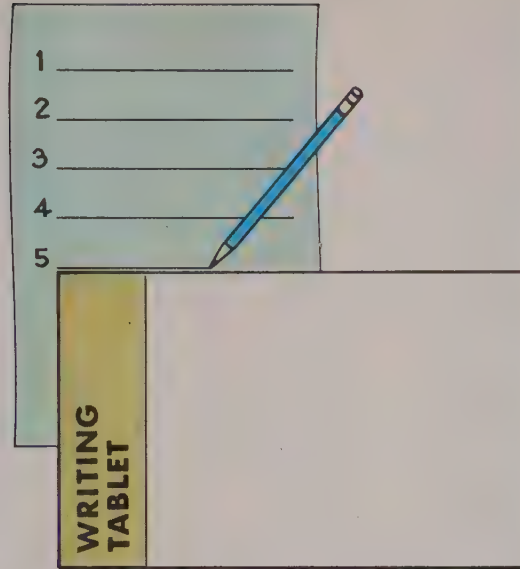


Can you use your ruler to find the length of your pencil?

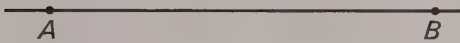
Discussing the Ideas

1. Which unit would give the largest number for the length of your pencil?
2. Which unit would give the smallest number for the length of your pencil?
3. Joe measured his crayon using a red ruler. He found it was 4 units long. What is the length of his crayon using a purple ruler?
4. Bill and Jane each made a ruler. Jane used a unit as wide as her hand. Bill used a unit as wide as his finger. If they both measure the same thing, who will get the larger number?

1. Draw five lines on your paper as shown. Number your lines 1 to 5.



2. On the top line use your ruler to mark 2 points that are 4 units apart. Name your points *A* and *B*.



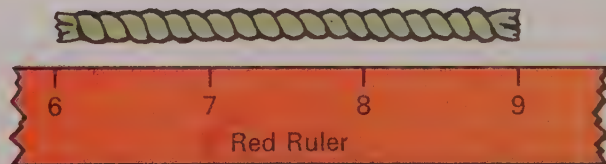
You have a **segment *AB*** that is 4 units long.

3.
 - a On line 2 mark a segment *CD* that is 3 units long.
 - b On line 3 mark a segment *EF* that is 5 units long.
 - c On line 4 mark a segment *GH* that is more than 3 units and less than 4 units long.
 - d On line 5 mark a segment that is more than 2 units and less than 3 units long.

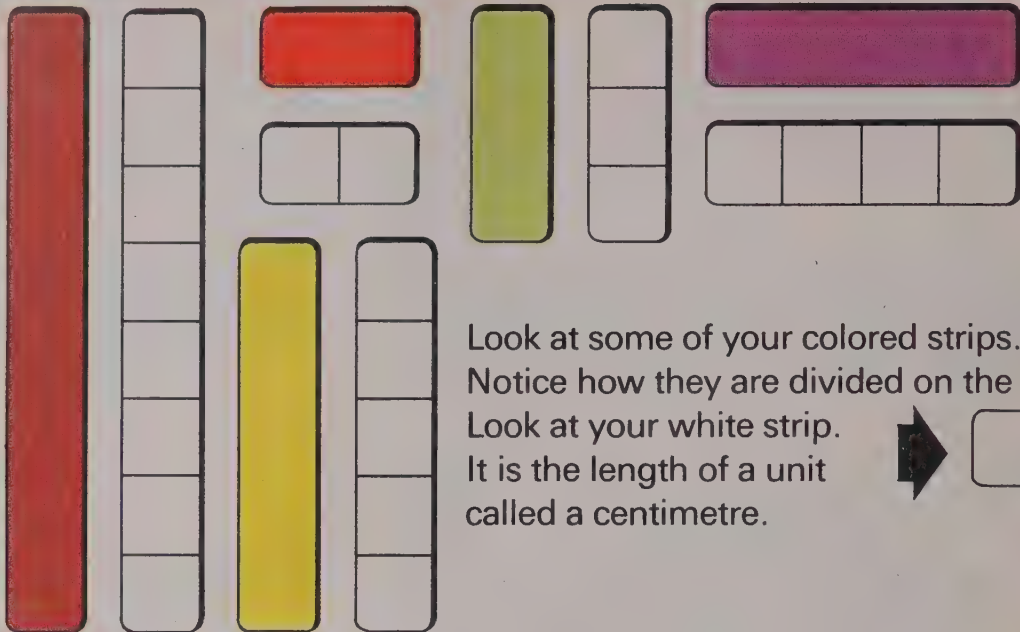
4. Try this one without using any of the rulers you made.

a How long is the rope if the red strip is the unit?

b How long is the rope if the light green strip is the unit?



Investigating the Ideas



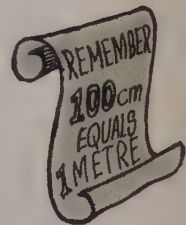
Look at some of your colored strips.
Notice how they are divided on the back.
Look at your white strip.
It is the length of a unit
called a centimetre.



Can you use the centimetre unit and
a strip of paper to make a ruler ?

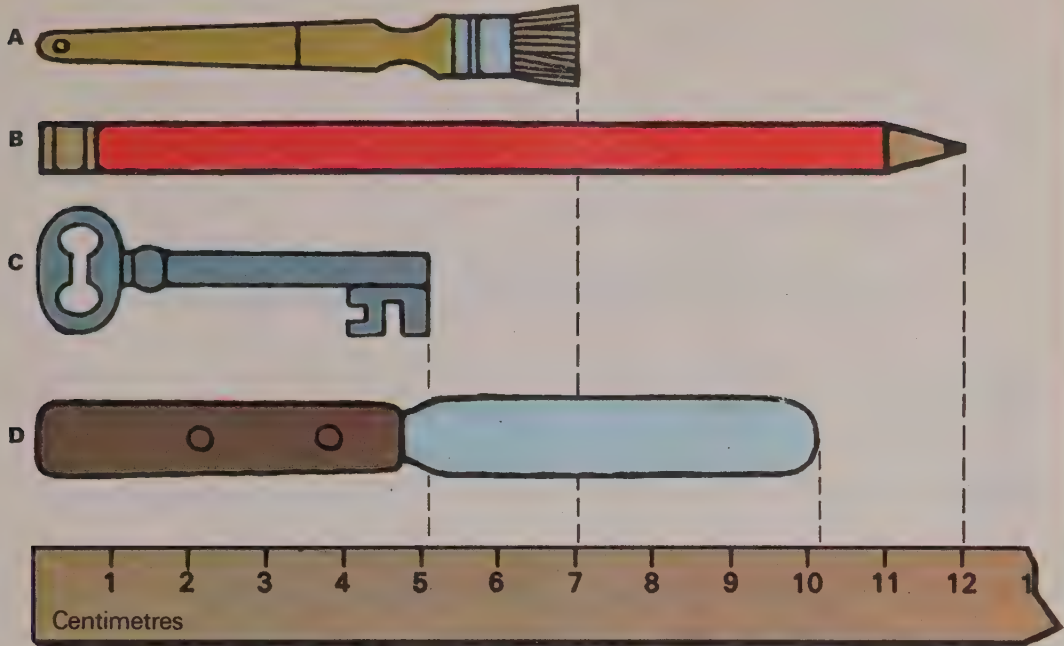
Discussing the Ideas

1. How does your ruler compare to a centimetre ruler ?
2. Can you name some objects that
are usually measured in
A centimetres ? B metres ?
3. A kilometre is 1000 metres. A train
of 72 boxcars is about 1 kilometre
long. What are some distances
that are usually measured in
kilometres ?
4. Which unit would you choose to measure
A a hockey arena ? B a pencil ? C the width of your room ?

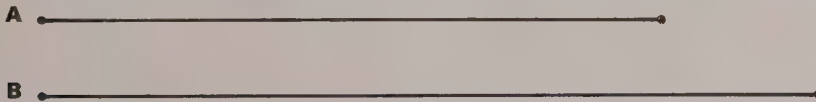



Using the Ideas

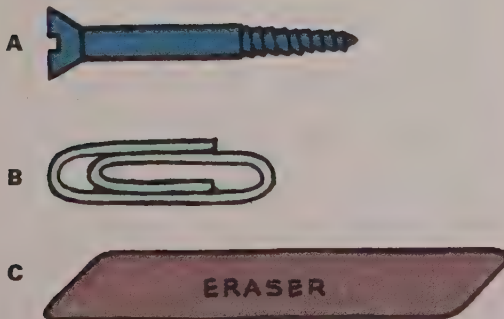
1. Find the length in centimetres of each object.



2. Use your centimetre ruler to measure each segment.



★ 3. If this  is your unit, find the measure of each object.



think

The bug went around one time. He traveled 12 units. About how long is this segment?



Investigating the Ideas

This is a **centimetre** unit. 

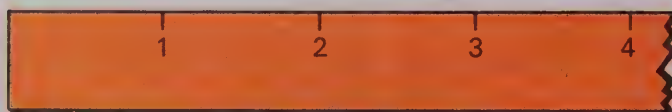
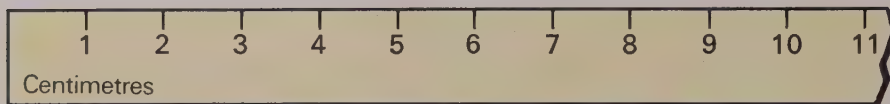
This is a unit, too. 

Find one of your strips that is just as long as the second unit.



Can you use that strip to make a ruler ?
Now use your ruler to find the length of this brush ?

Discussing the Ideas



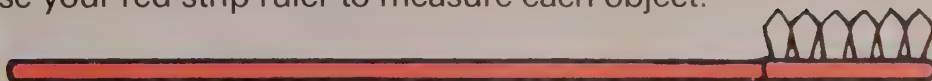
1. Which is longer, the red strip or the centimetre ?
2. Which ruler will give the greater number for the length of the brush ?
3. The crayon is about 4 red strips long. Measure it with a centimetre ruler.



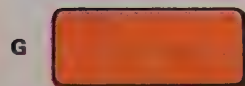
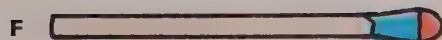
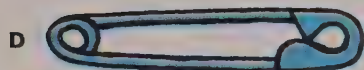
Did you get more or less than 4 ?

Using the Ideas

1. Use your red-strip ruler to measure each object.



2. Use your centimetre ruler to measure each object.



think

AD AE AF



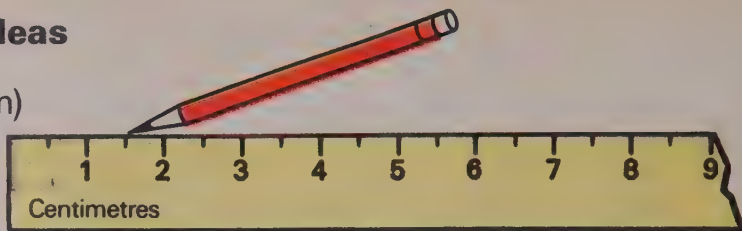
What comes next?

1. AA, AB, AC, AD, AE, ?
2. AR, BS, CT, DU, EV, ?
3. AZ, BY, CX, DW, EV, ?
4. AA, AB, BB, BC, CC, ?
5. AB, DE, GH, JK, MN, ?
6. AB, DC, EF, HG, IJ, ?

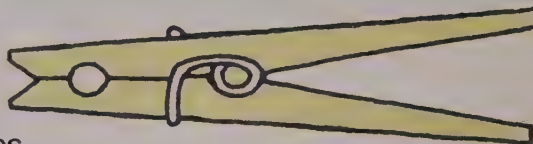
● How can you measure to the nearest unit?

Investigating the Ideas

Half-centimetre ($\frac{1}{2}$ cm) marks on your ruler help you find measures to the nearest centimetre.



Put half-centimetre marks on your ruler. Use it to tell whether the clothespin is closer to 6 or to 7 centimetres.



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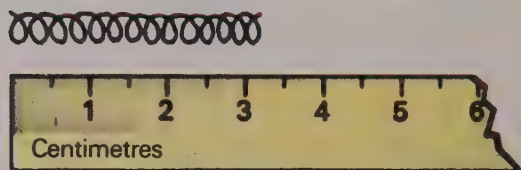
Can you measure other objects to the nearest centimetre?

List them and record their measures.

Discussing the Ideas

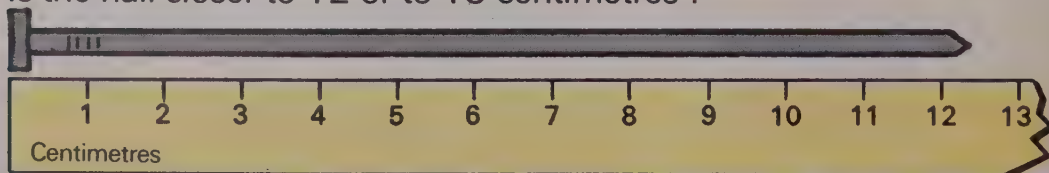
1. Explain how you could tell that the clothespin is closer to 7 cm. We say: The length **to the nearest centimetre** is 7.

2. The length of the spring is **more than** 3 cm but **less than** 4 cm. Is it closer to 3 or to 4?



3. The length of the spring (**to the nearest centimetre**) is **||||** cm.

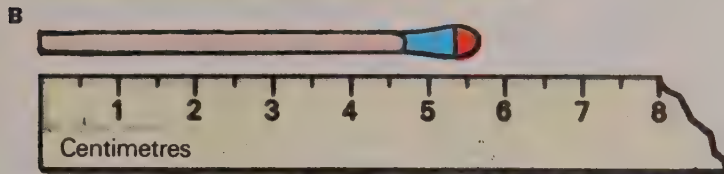
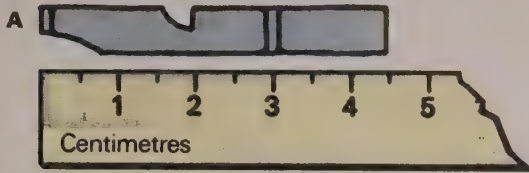
4. Is the nail closer to 12 or to 13 centimetres?



5. The length of the nail (**to the nearest centimetre**) is **||||** cm.

Using the Ideas

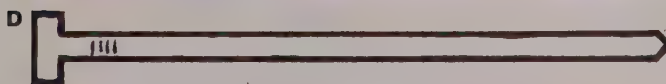
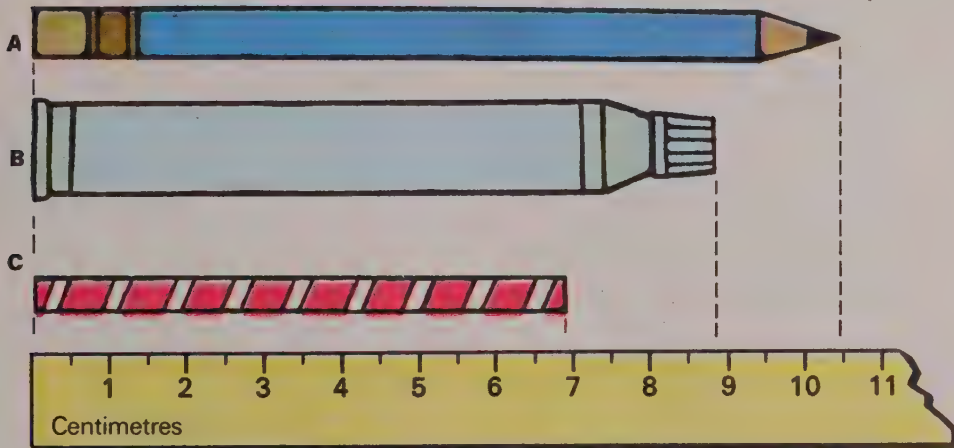
1. Give the length of each object to the nearest centimetre.



2. Measure each segment to the nearest centimetre.

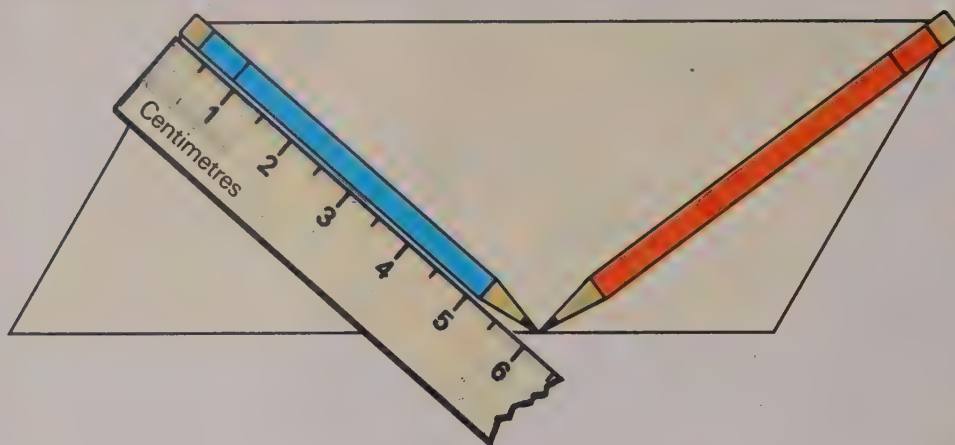
A _____ B _____
 C _____
 D _____
 E _____ F _____ G _____

3. Give the measure of each object to the nearest centimetre.



● How can you measure to the nearest half unit?

Investigating the Ideas



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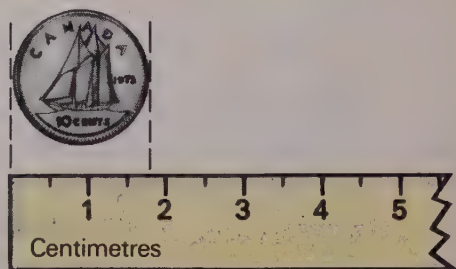
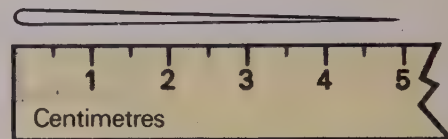
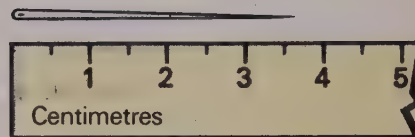
Look at the **blue** pencil and the ruler. Which pencil do you think is longer? Use your ruler to check your guess.

Discussing the Ideas

- A Is the end of the needle closer to $3\frac{1}{2}$ or to 4? (Read $3\frac{1}{2}$ as "three and one half.")

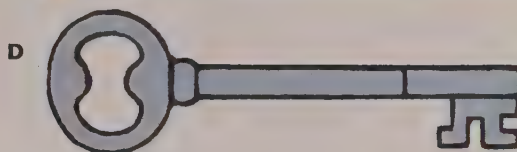
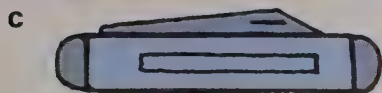
B What is the length of the needle **to the nearest half centimetre**?
- A Is the end of the toothpick closer to $4\frac{1}{2}$ or to 5?

B What is the length of the toothpick **to the nearest half centimetre**?
- Does the figure show that the width of the dime is nearer to $1\frac{1}{2}$ centimetres or to 2 centimetres?



Using the Ideas

1. Use your centimetre ruler to measure each object to the nearest half centimetre.



2. Use your ruler to help you answer these questions.
(Answer to the nearest half centimetre.)

- A How long is a dollar bill ?
- B How wide is a quarter ?
- C How thick is your pencil ?

think

Can other things be used to measure in centimetres ?



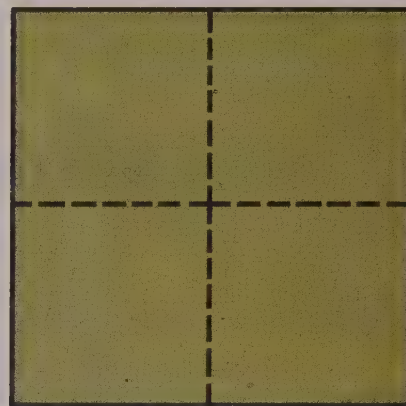
A nickel is 2 cm wide.
How long is this page in
nickels ? In centimetres ?



How wide is a dollar bill ?
Can it be used as a measuring unit ?
Check the length of this page in dollar bills.

Investigating the Ideas

Trace this region and cut it into four squares.




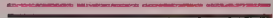

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How many different-shaped regions can you make using the 4 squares? Draw a picture of each one you find.



Discussing the Ideas

- We find the **area** of a region by counting **square units**.

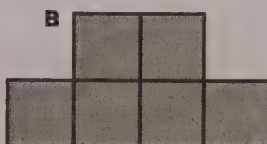
IF  is the unit

THEN this length  is .

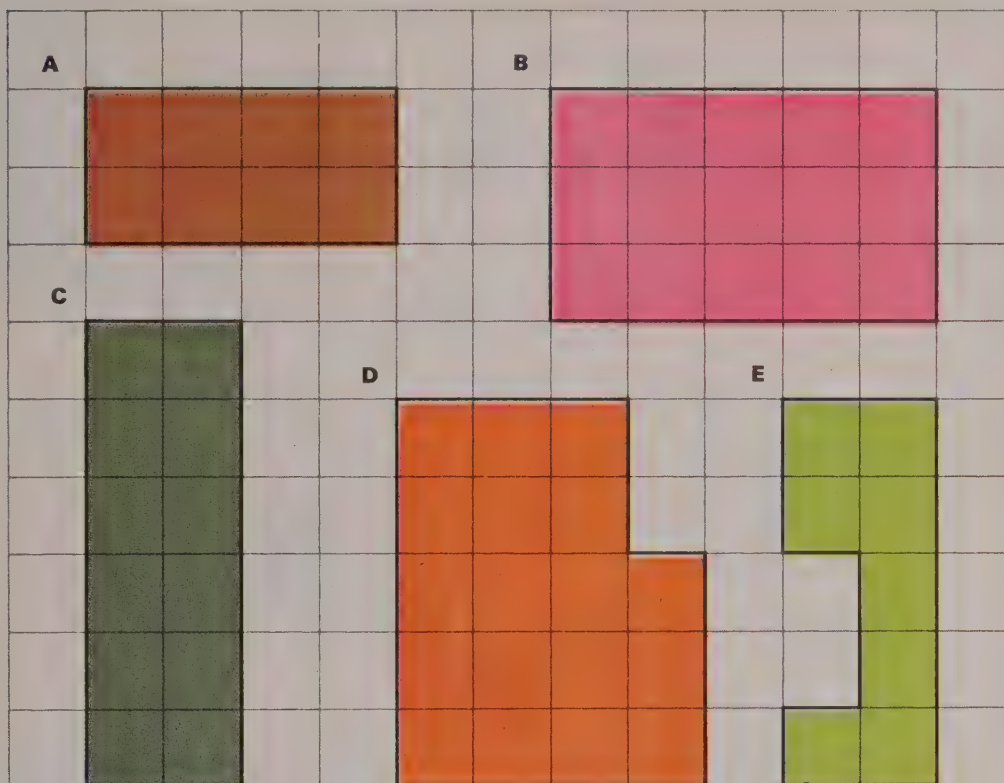
IF  is the unit

THEN this region has an area of . 

- What is the area of each region you found in the Investigation?
- If each small square is a unit, find each area. Explain how you found it.

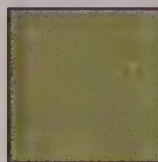


1. The unit in these exercises is the square centimetre.
Find the area of each shaded region.

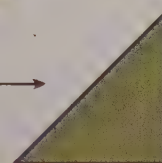


2. Draw a region that has an area of 6.
Use the same unit as in exercise 1.

- ★ 3. If the area of this region is 1, →



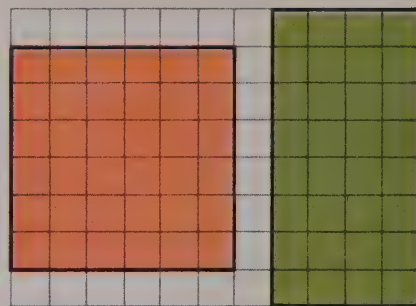
what is the area of this region? →



Investigating the Ideas

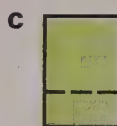
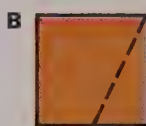
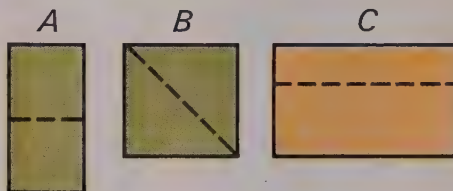
Use graph paper to cut out a square and a rectangle.

? How many ways can you fold each figure into two parts of the same size?

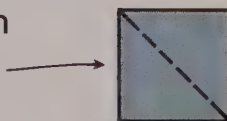


Discussing the Ideas

- Regions *A* and *B* are divided into **halves**. Region *C* is not divided into **halves**. Which regions below are divided into halves?



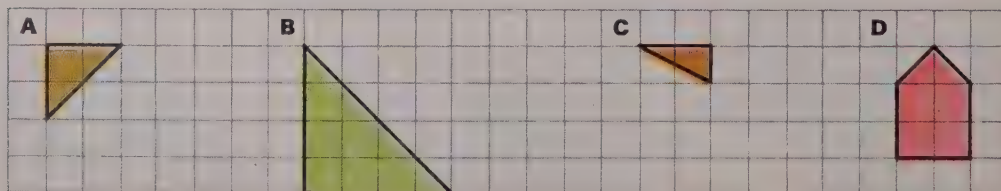
- If this region has an area of 4,



what is the area of this region?

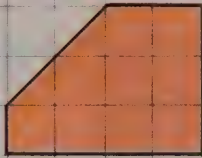


- Explain how to find the area of each shaded region. Each small square is 1 unit.

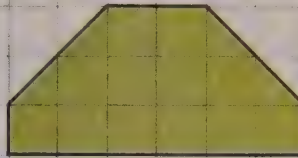


1. The units for these exercises are marked with gray lines. Find the area of each shaded region.

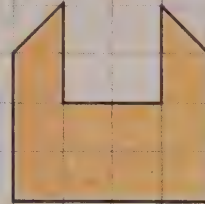
A



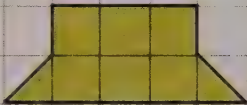
B



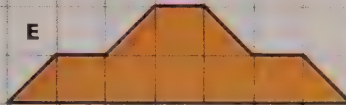
C



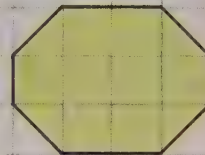
D



E



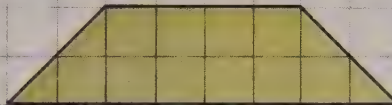
F



G



H

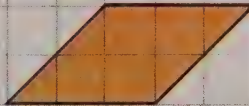


2. Find the area of each region.

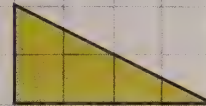
A



B

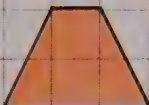


C

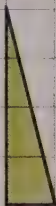


- ★ 3. Find the area of each region.

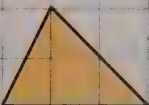
A



B



C



think

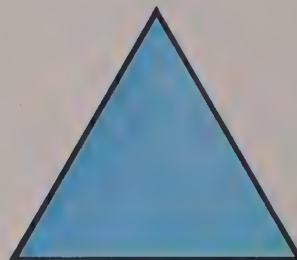
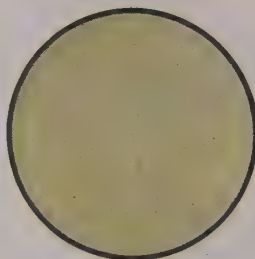
Estimate the area.



How can you use halves and fourths in measurement?

Investigating the Ideas

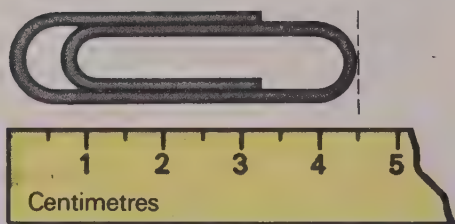
Trace each region on paper and then cut it out.



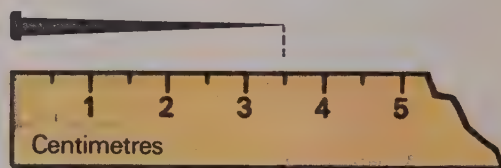
Can you fold each region into 4 parts that are the same size and shape?

Discussing the Ideas

1. The centimetre ruler has been divided into **halves**.



The length of the paper clip is $4\frac{1}{2}$ centimetres.



What is the length of the pin?

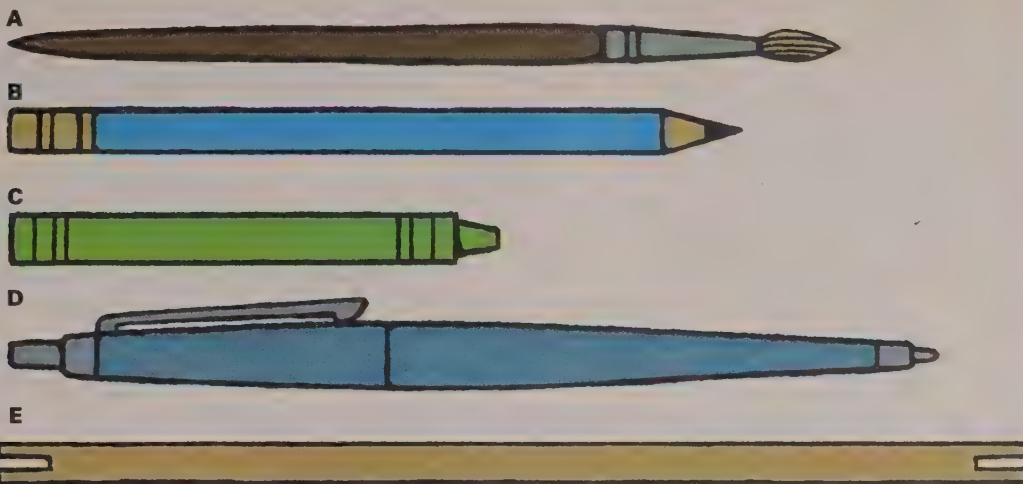
2. **A** Find the area.



B If you fold the rectangle into fourths, what is the area of each fourth?

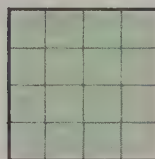
C What is the area of $\frac{3}{4}$ of the region?

1. Find each length to the nearest half centimetre.



2. A Find the area of this square.

- B What is the area of $\frac{1}{2}$ of it?
C What is the area of $\frac{1}{4}$ of it?

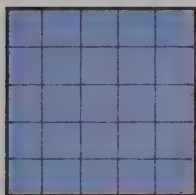


3. A Find the area of this rectangle.

- B What is the area of $\frac{1}{2}$ of it?
C What is the area of $\frac{1}{4}$ of it?
★ D What is the area of $\frac{3}{4}$ of it?



4. A What is the area of this square?

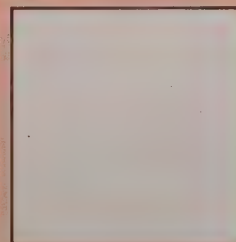


- ★ B What is the area of $\frac{1}{2}$ of it?
★ C What is the area of $\frac{1}{4}$ of it?

think



The area of this region is 9. Draw a picture of the unit.



● Let's find out more about fractions.

Investigating the Ideas

Give the missing fraction.

1. If you fold like this, —————→
each part is $\frac{1}{2}$ of the paper.



2. If you fold like this, —————→
each part is $\frac{1}{4}$ of the paper.



?

Cut out a strip of paper. Can you fold it so that each part is $\frac{1}{8}$ (one eighth) of the paper?

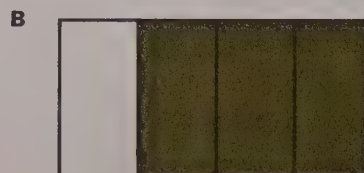
Discussing the Ideas

1. Explain what you would do if you wanted to color $\frac{3}{8}$ (three eighths) of the paper you folded.
2. A Give the fraction that tells what part of this strip is colored.

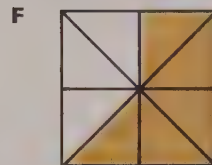
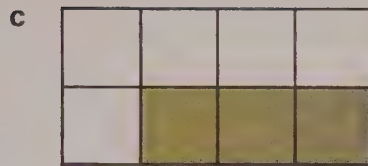
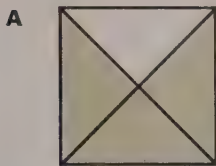


- B What part of the strip is not colored?

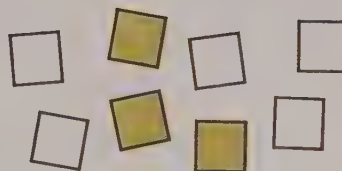
3. What part of each region is shaded?



1. Give the fraction that tells what part of each region is colored.

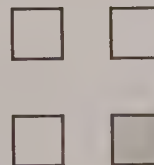


2. Jim folded a rectangle into eighths. He colored part of it and then cut it into squares like these.



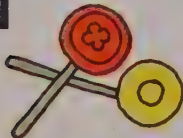
- A** What fraction tells the part of the rectangle he colored?
B What part of the set of squares is not colored?

3. Give the fraction that tells what part of this set of squares is colored.



Short Stories

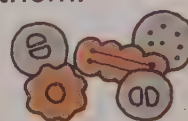
- 1** Had 6 baseball cards. Gave away $\frac{1}{2}$ of them. How many left?



- 2** Store had 6 lollipops. Bought $\frac{1}{3}$ of them. Bought how many?

- 3** 8 children.
 $\frac{1}{4}$ of them wear glasses.
 How many wear glasses?

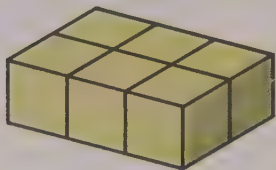
- 4** 12 cookies.
 $\frac{1}{4}$ of them are chocolate.
 How many are chocolate?



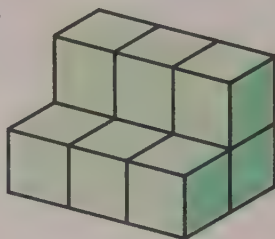
Investigating the Ideas

How many blocks does it take to make each figure?

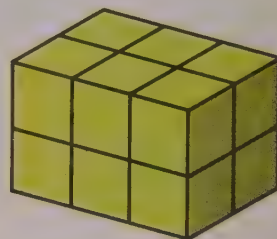
A



B



C




How many different-shaped figures can you make using four blocks?

Discussing the Ideas

1. Give the missing numbers. Explain your answers.

A

IF

this  is the unit


THEN

this length is .




B

IF

this  is the unit


THEN



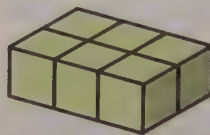
this area is .


C

IF

this  is the unit


THEN



this volume is .

2. What is the volume of each figure in the Investigation?

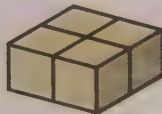
Using the Ideas

The unit used in these exercises is . Find the number of cubic units (volume) in each figure.

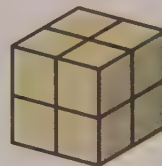
1.



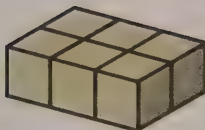
2.



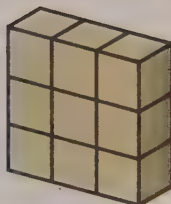
3.



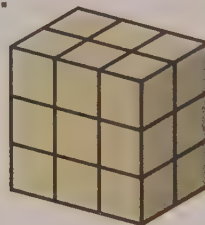
4.



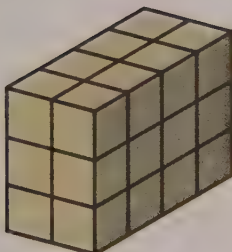
5.



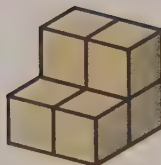
6.



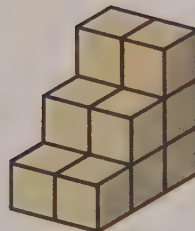
7.



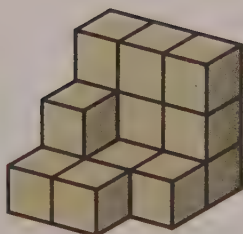
8.



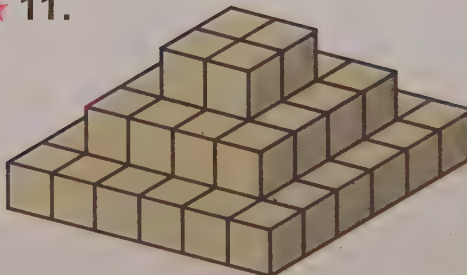
9.



★ 10.



★ 11.

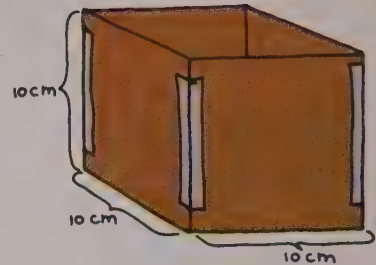


Investigating the Idea

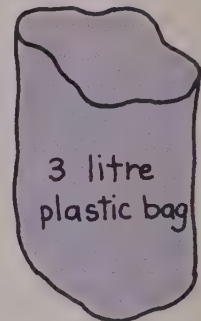
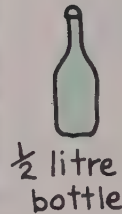
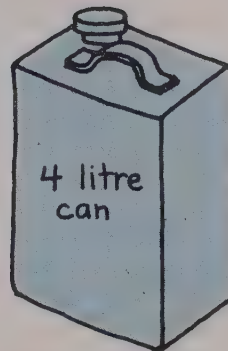
A **litre** is the unit used to measure volume.
A litre would just fill a container this size —

?

Make a collection of containers that hold about 1 litre. Can you find any that hold 2 litres ? more than 2 litres ? half a litre ?



Discussing the Idea



Suppose you collected and labelled these 5 containers. Knowing their volumes try answering these questions.

1. How many jugs would be needed to fill the can ?
2. If you empty the can into jugs and cartons, and have only 1 jug, how many cartons will be needed ?
3. About how many bottles would fill the bag ?
- ★ 4. What containers would you use to hold the contents of the bag
 - a if you could use 2 ?
 - b if you could use 3 ?
 - c if you could use only 1 container ?

Shopping Problems

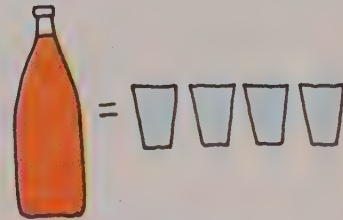
Sally's mother asked her to go to the store.
Here is her shopping list: →



Shopping List
Ice Cream
Bread (2 loaves)
Milk (2 litres)
Eggs (1 carton)
Orange Soda
Grape Drink (3 litres)

1. Sally picked up 3 half-litre cartons of milk.
How much more should she get ?

2. Sally knew that the orange soda was for her little brother's birthday party.
If each of the 6 boys at the party drinks 2 glasses of orange soda, how many bottles should Sally buy ?



3. Sally bought a carton of 6 half-litre bottles.
How many litres did she buy ?



4. Which should Sally buy to save money — the 3-litre jug or the 3 one-litre bottles ?

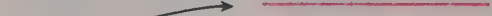



5. One container of ice cream holds enough for 4 sundaes. There will be 6 boys at the party. How many containers should Sally buy ?



Reviewing the Ideas

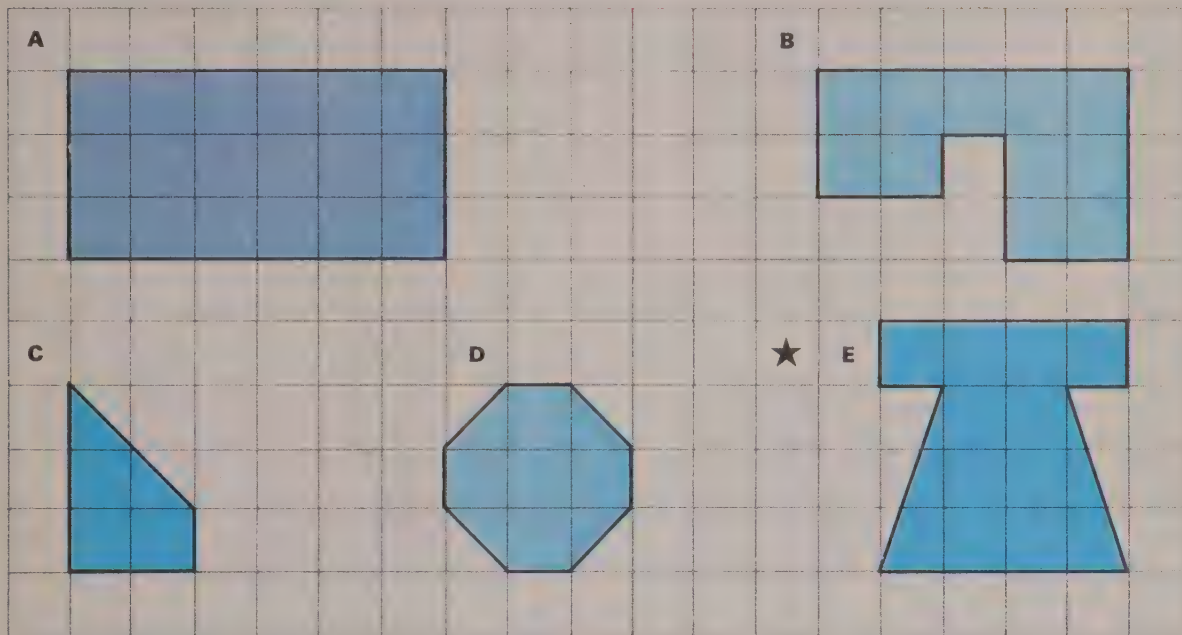


1. Bob takes steps about this long. 
Sue's steps are just half as long. 
 - A Who will take the most steps to cross the room?
 - B Who takes the longer step?
 - C If Bob takes 10 steps to cross the room, how many steps will Sue take?
 - D If Sue takes 12 steps from the door to the teacher's desk, how many steps will Bob take?
2. A Give the length of each segment using the **centimetre** as your unit.

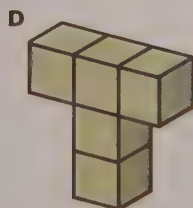
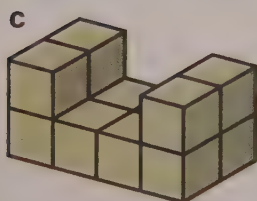
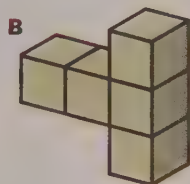
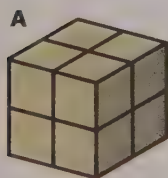
 - B Measure each segment to the nearest half centimetre.

★ C Ted called his unit the **pentacent** Pentacent
Give the measure of each segment above, using the **pentacent** as your unit. Use your ruler if you like.
3. Does the **pentacent** or the **centimetre** give the larger number when you measure the same object?
4. A Is 4 **centimetres** longer than 1 pentacent?
B Is 11 **centimetres** longer than 2 pentacents?

5. Using the unit shown, give the **area** for each region.

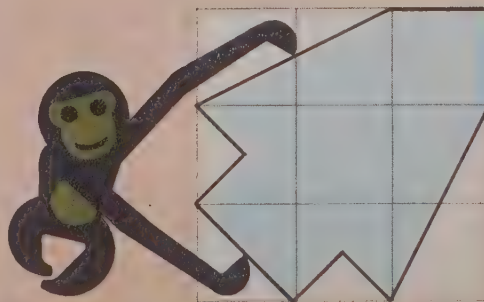


6. Give the **volume** of each figure below.



think

Find the area of this region.



Can grouping by tens help you find the number in a set?

Investigating the Ideas

How good are you at guessing?

1. Guess the number of blue stars quickly.



2. Give the number of red stars quickly.

3. Check your answers.
Which was easier?



ten



ten



Can you draw a set of dots (between 30 and 50) so that a classmate can give the number quickly?

Discussing the Ideas

1. Each set of coins in A, B, and C is worth the same amount.

- A What is the value of each set?
- B Which two sets are easiest to count?
Explain your answer.

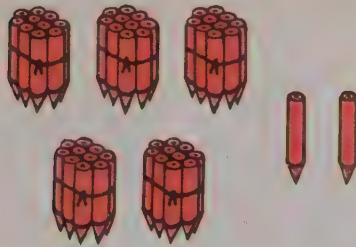


2. Suppose you had 40 checkers to count. Could you count these by only counting to ten once? Explain.

Using the Ideas

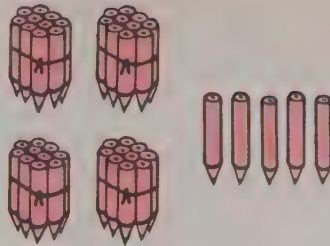
1. Write the numeral for each set of pencils.

A



5 tens and 2
We write $\overline{\text{|||||}}$.

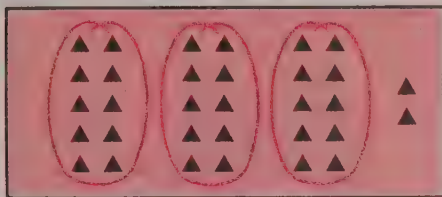
B



4 tens and 5
We write $\overline{\text{|||||}}$.

2. In the pictures below there are 10 objects in each ring.
Give the number of objects in each box.

A



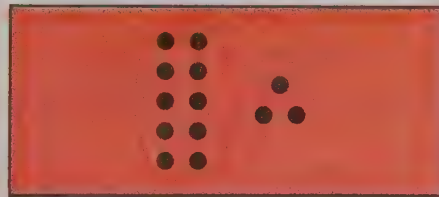
B



C



D



3. Write the 2-digit numeral for each of these.

A 2 tens and 3

D 6 tens and 7

G 1 ten and 1

B 4 tens and 2

E 9 tens and 3

H 1 ten and 0

C 3 tens and 4

F 5 tens and 7

I 2 tens and 0

4. Give the correct digit for each $\overline{\text{|||||}}$.

A 37 means 3 tens and $\overline{\text{|||||}}$.

E 93 means $\overline{\text{|||||}}$ tens and 3.

B 48 means $\overline{\text{|||||}}$ tens and 8.

F 15 means $\overline{\text{|||||}}$ tens and 5.

C 82 means 8 tens and $\overline{\text{|||||}}$.

G 67 means 6 tens and $\overline{\text{|||||}}$.

D 50 means $\overline{\text{|||||}}$ tens and 0.

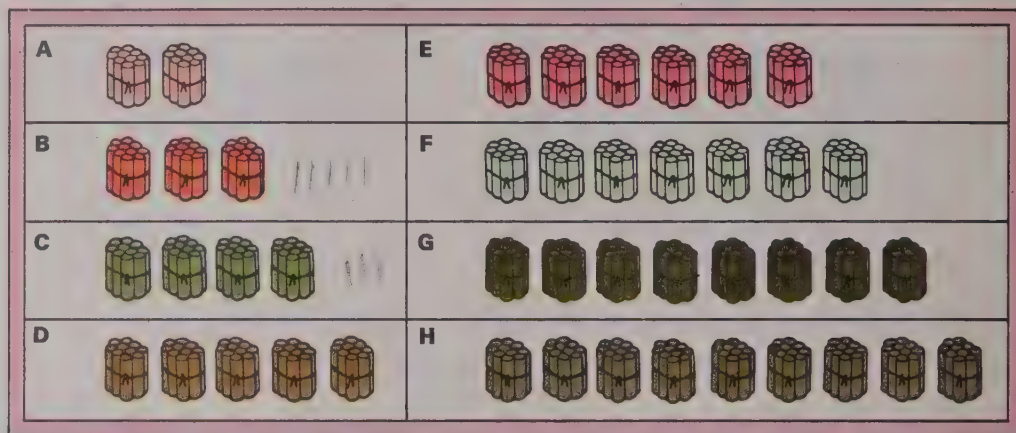
H 76 means $\overline{\text{|||||}}$ tens and 6.



Do you know the number names up to one hundred?

Discussing the Ideas

- There are ten sticks in each bundle. Tell the number of tens and then the number of sticks in all.



- Read the number. Then tell how many tens and how many ones.

A 63	D 57	G 96	J 60	M 17	P 11	S 48	V 35
B 47	E 21	H 85	K 51	N 42	Q 10	T 80	W 89
C 39	F 16	I 43	L 30	O 78	R 99	U 27	X 70

- Give the word name for each of these.

A 6 tens and 5	E 8 tens and 3	I 7 tens and 0
B 5 tens and 9	F 3 tens and 0	J 4 tens and 9
C 4 tens and 2	G 4 tens and 3	K 8 tens and 5
D 5 tens and 4	H 1 ten and 0	L 7 tens and 3

- Count by tens to one hundred.

ten, twenty, thirty, . . .

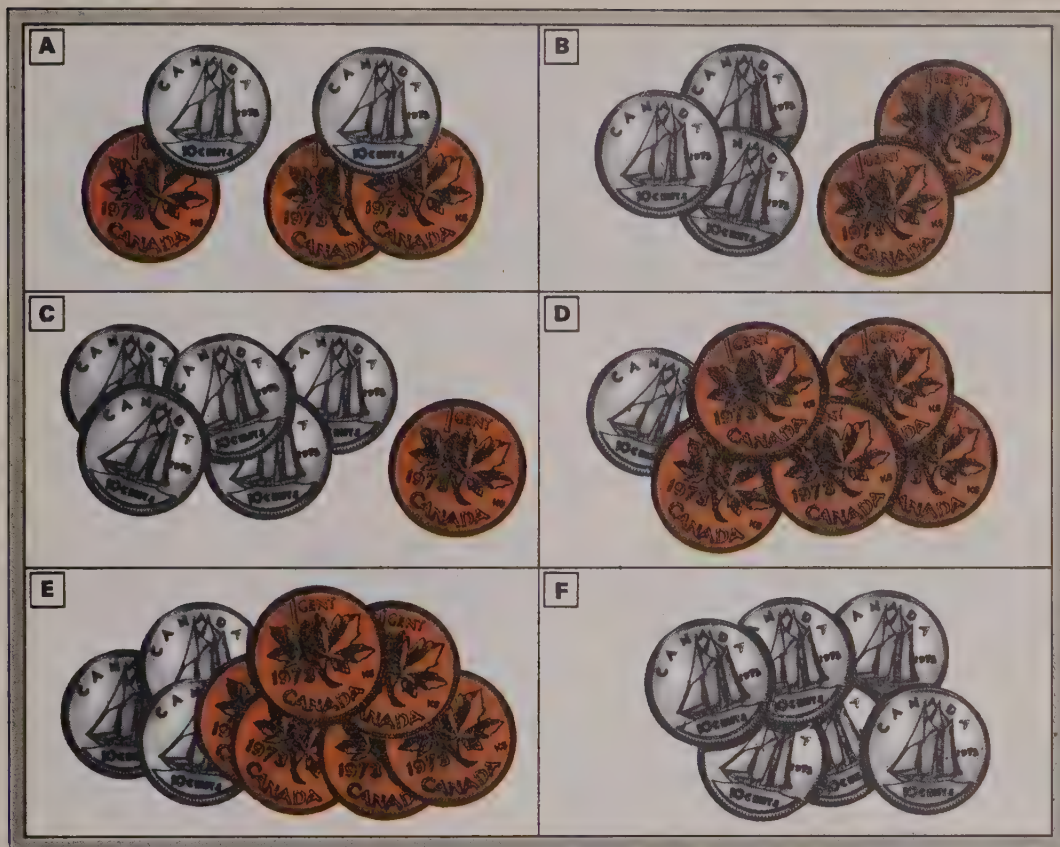
- Count by fives to one hundred.

five, ten, fifteen, twenty, . . .

- Count by twos to one hundred.

two, four, six, eight, ten, twelve, . . .

1. Find the value of each collection.



2. Copy each row, giving the missing numbers.

- A 4, 5, 6, 7, 12, 13
- B 24, 25, 26, 27, 32, 33
- C 52, 53, 54, 55, 56, 57,
- D 90, 91, 96, 97, 98, 99
- E 72, 73, 74, 79, 80, 81
- F 48, 49, 50, 51, 52, 53
- G 38, 43, 44, 45, 46, 47
- H 62, 63, 64, 65, 66, 67
- I 4, 5, 6, 7, 8, 9
- J 22, 23, 24, 25, 26, 27

think

1. Using the digits **1, 2, 7, 9**, how many 2-digit numerals can you write?
2. Which of these numerals names the largest number?
3. Which names the smallest?



Investigating the Ideas



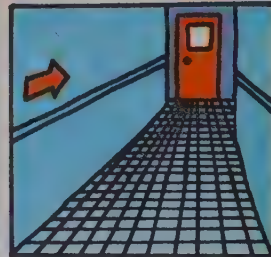
How far down the sidewalk will 100 steps take me?



How high up the wall is 100 cm?



How full will the measuring cup be with 100 beans?






How far down the hall is the 100th tile from here?



How well can you estimate 100? Try one of the questions above.

Discussing the Ideas

1. Give the missing numerals in the table.

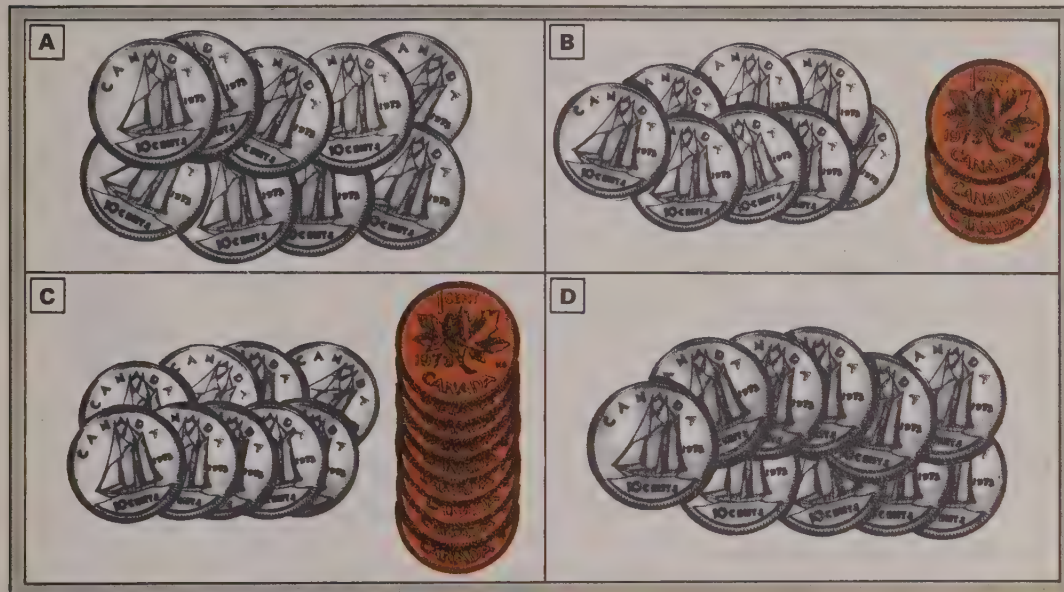
We see	We think	We write
	8 tens	80
	9 tens	A
	10 tens	B

- Explain how to count one hundred pencils without counting higher than ten.
- How would you draw one hundred dots without counting higher than ten?
- Can you draw one hundred twenty-three dots without counting higher than ten? Explain.

1. Give the missing numerals.

- A For 9 tens and 6, we write ||||| . D For 9 tens and 9, we write ||||| .
 B For 9 tens and 7, we write ||||| . E For 9 tens and 10, we write ||||| .
 C For 9 tens and 8, we write ||||| . F For 10 tens and 0, we write ||||| .

2. Find the total number of cents in each box.



3. Write the missing numerals.

For 10 tens, we write 100.

For 20 tens, we write 200.

- A For 30 tens, we write ||||| .
 B For 40 tens, we write ||||| .
 C For 80 tens, we write ||||| .

4. Write the missing numerals.

For 10 tens, we write 100.

For 11 tens, we write 110.

For 12 tens, we write 120.

- A For 13 tens, we write ||||| .
 B For 14 tens, we write ||||| .
 C For 15 tens, we write ||||| .
 D For 16 tens, we write ||||| .

think

The rug covers some of the tiles. How many tiles on this floor?



Investigating the Ideas

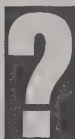
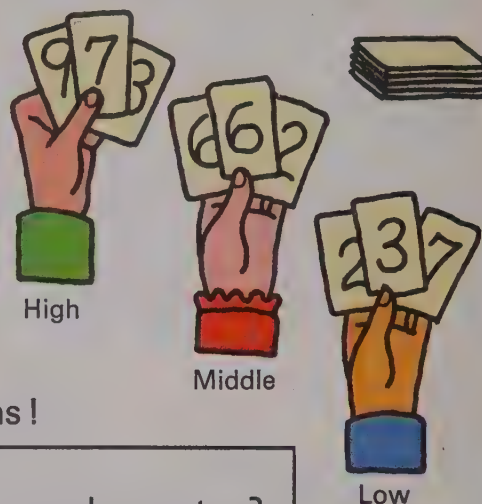
Directions:

Use 3 sets of 9 cards each with the digits 1 through 9. Shuffle the 27 cards and deal 3 cards to each of three players.

Each player forms a 3-digit numeral and guesses whether his number is **High**, **Middle**, or **Low**.

Then compare numbers and score 1 point for a correct guess. Shuffle and deal again. 10 points wins!

High, Middle, Low Game



Can you play this game with some classmates?

Discussing the Ideas

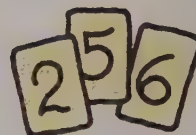
- John and Anne both said their numbers were **High**. Which player won?



John



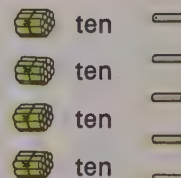
Anne



Nancy

- Would Nancy win if she had said **Middle**? Who was middle?
- Use the figure to answer the questions.

- How many hundreds?
- How many tens?
- How many ones?
- How many sticks, 254, 542, or 245?








- Read the number. Then tell how many hundreds, tens, and ones.

A 278 C 512 E 765 G 318 I 380 K 900 M 707 O 437
B 346 D 923 F 492 H 640 J 704 L 506 N 770 P 864

1. Write the numeral. (*h* stands for hundreds and *t* for tens.)

- | | | |
|-----------------------------------|-----------------------------------|-----------------------------------|
| A 3 <i>h</i> , 2 <i>t</i> , and 6 | D 6 <i>h</i> , 0 <i>t</i> , and 1 | G 6 <i>h</i> , 2 <i>t</i> , and 7 |
| B 4 <i>h</i> , 7 <i>t</i> , and 2 | E 3 <i>h</i> , 2 <i>t</i> , and 0 | H 1 <i>h</i> , 0 <i>t</i> , and 0 |
| C 6 <i>h</i> , 5 <i>t</i> , and 0 | F 3 <i>h</i> , 0 <i>t</i> , and 0 | I 7 <i>h</i> , 6 <i>t</i> , and 5 |

2. Give the missing digit.

- A 384 means 3 hundreds,  tens, and 4 ones.
 B 659 means  hundreds, 5 tens, and 9 ones.
 C 518 means 5 hundreds, 1 ten, and  ones.
 D 304 means  hundreds, 0 tens, and 4 ones.
 E 927 means 9 hundreds,  tens, and 7 ones.


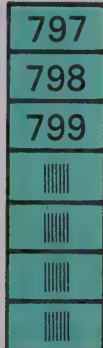
3. Write the numeral for each part.

- | | |
|----------------------------|------------------------------|
| A two hundred eighty-three | D six hundred fifty-four |
| B five hundred sixty-seven | E three hundred thirty-nine |
| C nine hundred forty-one | F seven hundred twenty-eight |

4. Find the number that is 1 more than

- | | | | | |
|------|------|-------|-------|-------|
| A 9 | D 49 | G 89 | J 119 | M 199 |
| B 19 | E 69 | H 99 | K 139 | N 699 |
| C 29 | F 79 | I 109 | L 439 | O 899 |

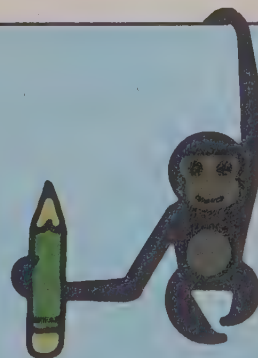
5. Copy each column and complete the counting.

- | | | | |
|---|---|---|---|
| A |  | B |  |
|---|---|---|---|

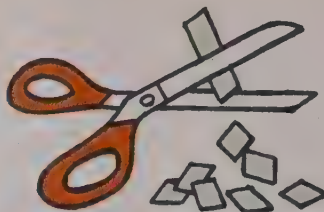
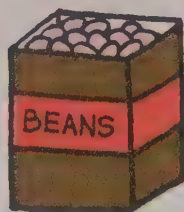
think

Find the number that is 1 less than

- one hundred.
- one thousand.
- ten tens.
- ten hundreds.
- one hundred hundreds.



Investigating the Ideas



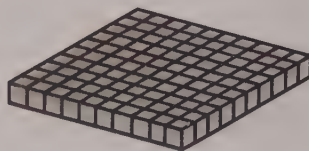
?

How long do you think it would take you to count ten hundred objects? Try this with a set of objects such as one of those above.

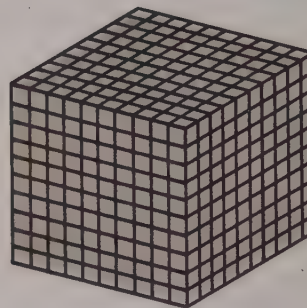
Discussing the Ideas



ten (10)



one hundred (100)



one thousand (1000)

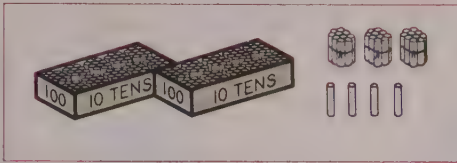
1. **A** Which picture shows ten tens?
B Which one shows ten hundreds?
2. **A** How many toothpicks should each of 10 children count to count a total of 1000 toothpicks?
B How many groups of 10 toothpicks must each child count?
3. Can you count a thousand beans without ever counting higher than 10?
4. How many tens make a thousand?

Using the Ideas

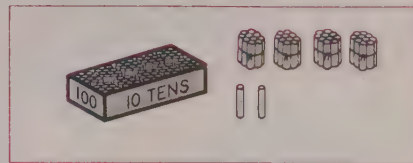
1. Give the number for each set.

There are 10 in each bundle and 100 in each box.

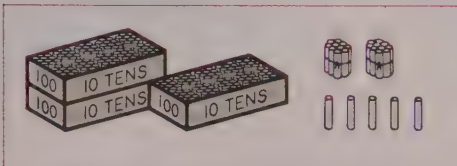
A



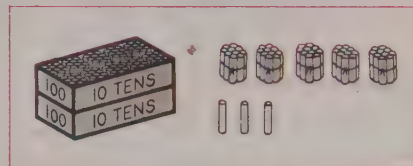
B



C



D



2. Give the missing numerals in the table.

We see	We think	We write
	7 hundreds	700
	8 hundreds	A
	9 hundreds	B
	10 hundreds	c

3. Write the correct numerals.

- A For 4 hundreds, 8 tens, and 3, we write
- B For 4 hundreds, 9 tens, and 7, we write
- c For 9 hundreds, 9 tens, and 7, we write
- d For 9 hundreds, 9 tens, and 8, we write
- E For 9 hundreds, 9 tens, and 9, we write
- F For 10 hundreds, 0 tens, and 0, we write

Investigating the Ideas

Look up one of the following.

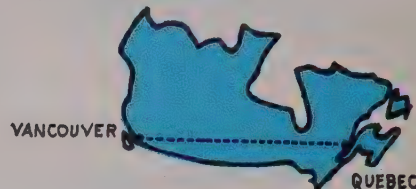
A Price of your favorite car



B Weight of a hippopotamus



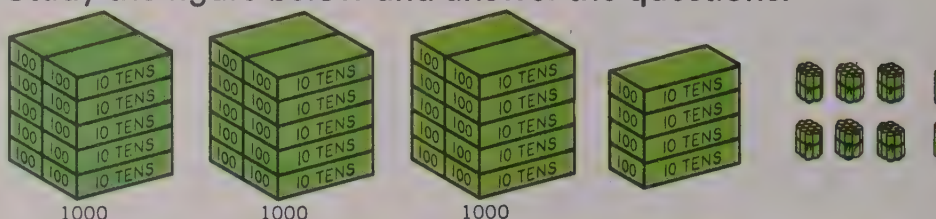
C Kilometres from Vancouver to Quebec



Can you find some other examples of 4-digit numerals in newspapers, magazines, and books?

Discussing the Ideas

1. Study the figure below and answer the questions.



- A How many thousands? C How many tens?
B How many hundreds? D How many ones?
E Explain the meaning of the numeral 3462.

2. A Can you read the numeral on the sign?

- B How many thousands in the numeral?
C How many hundreds in the numeral?
D How many tens? ones?

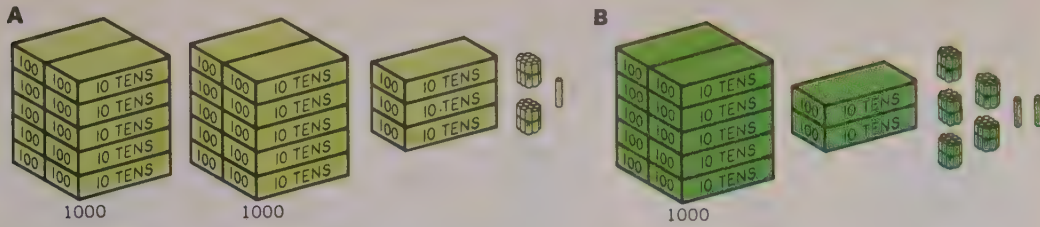


3. Read the number. Then tell how many thousands, hundreds, tens, and ones.

- | | | | | |
|--------|--------|--------|--------|--------|
| A 7264 | E 1635 | I 9025 | M 8340 | Q 9216 |
| B 8315 | F 7986 | J 8840 | N 2600 | R 7007 |
| C 9126 | G 8204 | K 7602 | O 5000 | S 6000 |
| D 8427 | H 3716 | L 9100 | P 8083 | T 5080 |

Using the Ideas

1. Give the 4-digit numeral for each set.



2. Write the 4-digit numeral for each of these. (*th* stands for thousands, *h* stands for hundreds, and *t* stands for tens.)

A 6 *th*, 5 *h*, 2 *t*, and 4

D 9 *th*, 4 *h*, 0 *t*, and 0

B 9 *th*, 4 *h*, 2 *t*, and 1

E 9 *th*, 0 *h*, 0 *t*, and 0

C 9 *th*, 4 *h*, 2 *t*, and 0

F 6 *th*, 0 *h*, 8 *t*, and 0

3. In each numeral below, one of the digits is red. Give the number for which that digit stands. For example, in exercise A the 7 stands for 700.

A 6728

C 4286

E 7106

G 9457

I 4037

B 4325

D 9515

F 8732

H 1260

J 5208

4. Find the missing digit for each of these.

A 6721 means 6 hundreds, 7 thousands, 2 one, 1 tens.

B 4362 means 4 thousands, 3 tens, 6 hundreds, 2 ones.

C 7820 means 2 tens, 8 hundreds, 0 ones, 7 thousands.

D 5207 means 2 hundreds, 0 tens, 5 thousands, 7 ones.

5. Copy each column and complete the counting.

A	996	B	2396
	997		2397
	1002		

think

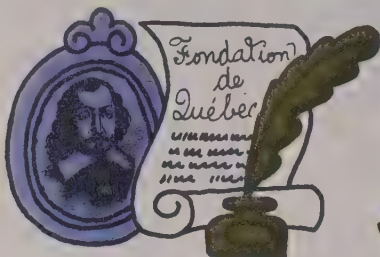
1. What is the smallest 4-digit number that uses just 3 different digits?
2. What is the largest such number?



● Let's compare the "sizes" of numbers.

Investigating the Ideas

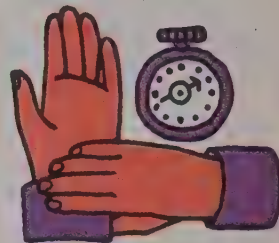
Choose one of these investigations.



A Find two important dates in history.



B Find the price at two stores of something you want to buy.



C Find the numbers of your heartbeats and breaths per minute.

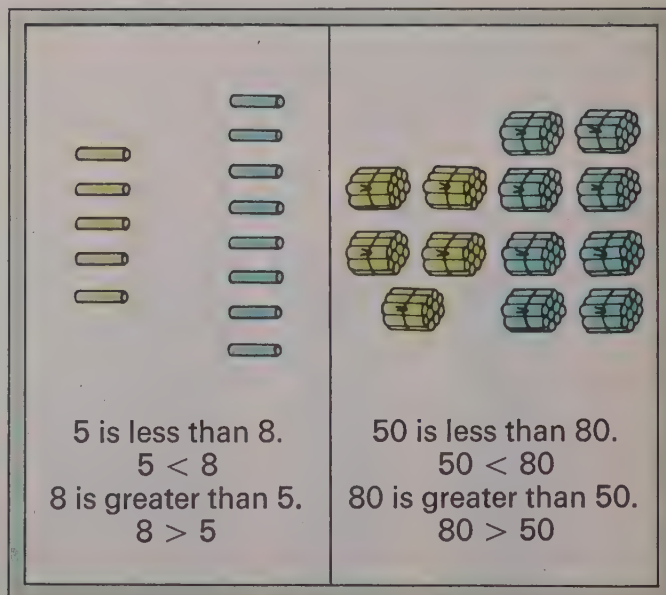


Can you tell which of the two numbers you found is greater?

Discussing the Ideas

1. Study the figure. Then answer the questions.

- A** Which is greater, 500 or 800?
- B** Which is greater, 105 or 108?
- C** Which is greater, 150 or 180?
- D** Which is greater, 524 or 824?



2. Explain an easy way to remember how to use the inequality marks ($<$ and $>$).

1. Which of the two numbers is greater ?


- | | | | |
|----------|------------|--------------|----------------|
| A 9 or 7 | D 80 or 20 | G 900 or 300 | J 2000 or 5000 |
| B 5 or 8 | E 10 or 50 | H 400 or 700 | K 6000 or 4000 |
| C 6 or 2 | F 60 or 40 | I 600 or 500 | L 8000 or 9000 |


2. Answer true or false for each exercise.


- | | |
|--------------------------|-------------------------|
| A 9 is greater than 7. | G 200 is less than 500. |
| B 90 is greater than 70. | H 300 is less than 200. |
| C 50 is greater than 80. | I 604 is less than 607. |
| D 51 is greater than 50. | J 820 is less than 850. |
| E 68 is greater than 64. | K 750 is less than 720. |
| F 72 is greater than 73. | L 930 is less than 940. |


3. Which of the two numbers is greater ?


- | | | | |
|----------|------------|--------------|----------------|
| A 8 or 3 | D 82 or 32 | G 68 or 63 | J 628 or 623 |
| B 6 or 9 | E 67 or 97 | H 625 or 925 | K 6219 or 9219 |
| C 5 or 8 | F 35 or 38 | I 655 or 685 | L 4519 or 4819 |


4. Write each number pair on your paper. Then put the correct mark in place of the . Write the two numbers in the order given.

A 2  8 Answer: $2 < 8$


B 80  50

C 72  92

D 72  71


E 72  78

F 200  500

G 230  530

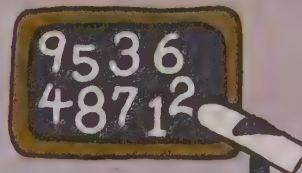
H 837  537

I 520  580

J 684  654

K 8237  8537

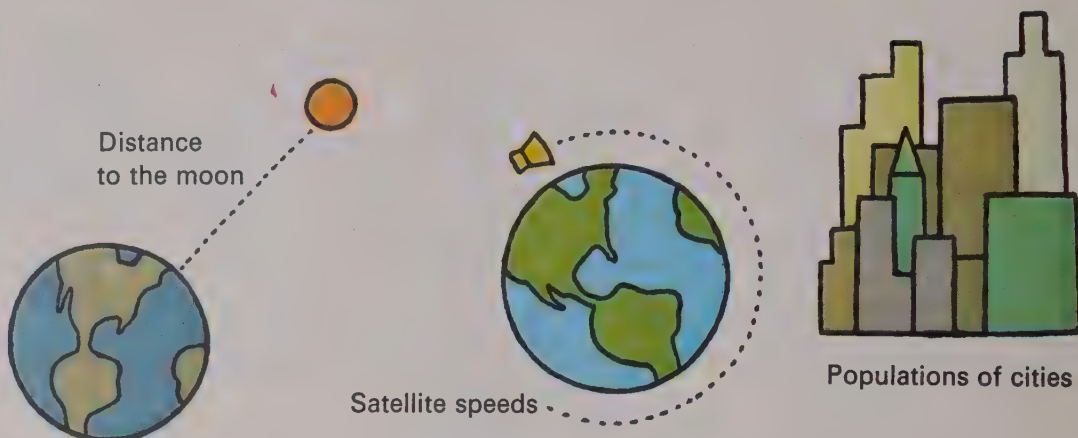
think



1. Find the largest 4-digit number that uses no digit twice.
2. Find the smallest 4-digit number that uses no digit twice.
3. Find the largest 4-digit number that uses 2 digits twice each.

Investigating the Ideas

The pictures below suggest some large numbers.



Can you find and read some numerals with 5 or more digits?

Discussing the Ideas

1. Give the number of thousands.

A 6287 Answer: 6

E 37 564

I 875 486

B 27 287

F 291 564

J 326 439

C 394 287

G 53 486

K 52 475

D 9564

H 7486

L 18 627

2. Write a numeral with 5 or 6 digits on the chalkboard. Have a classmate read it and tell how many thousands, hundreds, tens, and ones.

3. For 1 million, we write 1 000 000. Explain how to write

A 2 million.

C 23 million.

B 3 million.

D 672 million.

1. Give the number of thousands. For part A, write 5.

For part B, write 38

A 5392

C 7682

E 53 007

G 100 005

B 38 467

D 23 487

F 467 265

H 999 999

2. Write the numeral for each exercise.

A seven thousand, two hundred twenty-six

B fourteen thousand, five hundred eighty-three

C ninety-six thousand, four hundred thirty-eight

D one hundred twenty-six thousand, two hundred seventy-six

E three hundred eighty-six thousand, four hundred thirty

F nine hundred ninety-nine thousand, nine hundred ninety-nine

3. Give the next three numbers for each of these.

A 50 000

B 95 000

C 500 000

D 950 000

60 000

96 000

600 000

960 000

70 000

97 000

700 000

970 000

⋮

⋮

⋮

⋮

think

I think I'm big until

I spy

So many numbers

larger than I.

My name has a one

And zeros galore.

Seven digits in all,

and not one more.

WHO AM I?

4. Guess the correct answer to each of these questions.

A How long is 1 million

seconds? (about a day;
about 4 days; about 2 weeks)

B How many trips around the

world would take you 1 million
kilometres? (about 5; almost 10;
about 25)

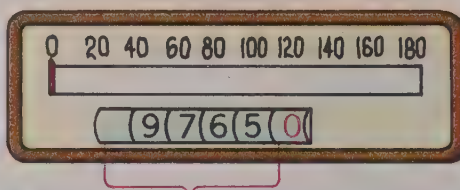
C How many full-sized cars

weigh 1 million kilograms?
(almost 5; about 40;
almost 150)

Jim liked to watch the odometer on his father's car when he and his family were on vacation last summer. When they started the trip the odometer looked like this:



The odometer counts kilometres travelled.



This part tells the number of kilometres.

1. How far had Jim's family travelled when the odometer looked like this? →

(9)(7)(8)(5)

2. Jim saw this sign.



He looked at the odometer and saw this. →

(9)(7)(9)(8)

What did the odometer show when they reached Redwood?

3. At Wood City the odometer looked like this. →

(1)(0)(7)(8)(4)

At River City the odometer looked like this. →

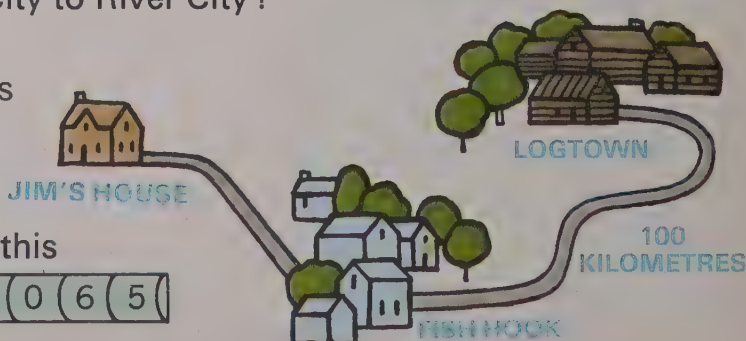
(1)(0)(7)(9)(4)

How far is it from Wood City to River City?

4. Logtown is 100 kilometres farther from Jim's house than Fish Hook is.

The odometer looked like this at Fish Hook. →

(1)(1)(0)(6)(5)



What do you think the odometer read at Logtown?

Mountain Peaks in North America



The table gives the heights of some of the highest mountains in North America. The first two mountains in the table are the highest in North America.

NAME	PLACE	METRES
McKinley	Alaska	6096
Logan	Canada	5955
Citlaltepetl	Mexico	5610
King	Canada	5139
Steele	Canada	4932
Bona	Alaska	4926
Wood	Canada	4765
Bear	Alaska	4455
Whitney	California	4348
Elbert	Colorado	4329
Rainier	Washington	4323
Lincoln	Colorado	4285

1. What mountain peak in the table is more than 5100 metres and less than 5400 metres ?
2. What mountain peak in the table is between 4500 metres and 4800 metres ?
3. How many peaks in the table are less than 4800 metres ?
4. How many peaks in the table are more than 4500 metres ?
How many are more than 4200 metres ?
5. If an airplane flies at 5100 metres, how many of these peaks could it fly over ?
6. Which mountain peaks are more than 4320 metres and less than 4350 metres ?
7. How much higher is Mount Steele than Mount Bona ?
8. How much higher is Mount Elbert than Mount Rainier ?
9. Mount Hubbard (not listed in the table) is 30 metres higher than Mount Bear. How high is Mount Hubbard ?
10. How much higher is Mount Wood than Mount Bear ?



1. Give the number for each set of sticks.



2. Write the numeral for each of these.

A 7 tens and 6

B 3 tens and 0

C 5 tens and 2

D 6 tens and 9

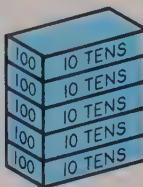
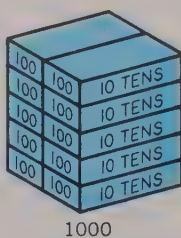
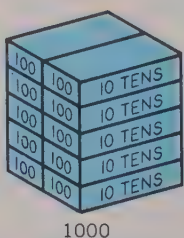
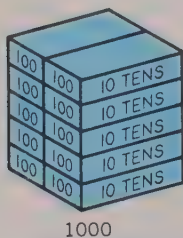
E 8 hundreds, 6 tens, and 5

F 7 hundreds, 1 ten, and 2

G 1 hundred, 0 tens, and 9

H 9 hundreds, 9 tens, and 9

3. How many sticks in this set?



4. Write the numeral for each of these.

A seventy-five

B forty-six

E six thousand, four hundred thirty-two

F twenty-three thousand, one hundred sixty-nine

G four hundred sixty-eight thousand, two hundred twenty-one

C two hundred eighty-seven

D four hundred ninety-three

5. Give the next three numbers in each counting sequence.

A 16, 17, 18, ...

B 55, 56, 57, ...

C 96, 97, 98, ...

D 127, 128, 129, ...

E 397, 398, 399, ...

F 996, 997, 998, ...

6. Give the correct sign $>$ or $<$ for each

A 68 78

B 43 33

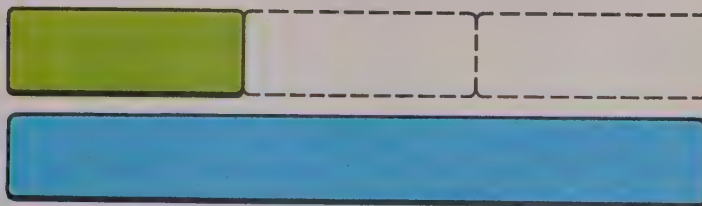
C 127 327

D 546 526

E 3285 3286

F 9463 9763

1. How many green strips long is the blue strip?

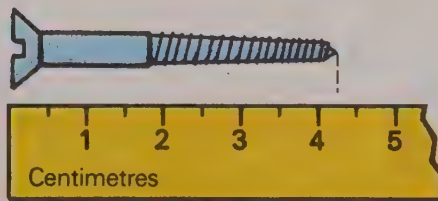


2. Use your ruler to measure the nail file to the nearest centimetre.



3. A Is the tip of the screw nearer to 4 centimetres or to $4\frac{1}{2}$ centimetres?

- B To the nearest half centimetre, the length is $\frac{\quad}{\quad}$ centimetres.



4. Give the fraction that tells what part of each region is colored.

A



B



C



D

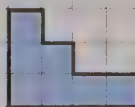


5. Find the area of each shaded region. Each small square is a unit.

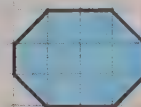
A



B



C



6. Give the volume of each figure below.

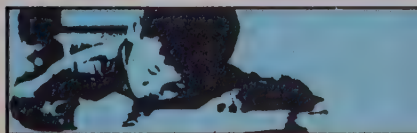
A



B



C



You are invited to explore

**ACTIVITY
CARD 1**
Page 309

Addition and Subtraction

● Are addition and subtraction related?

Investigating the Ideas



Start with 3

put in 2

$$3 + 2 = 5$$

and write an addition equation.



Now you have 5

take out 2

$$5 - 2 = 3$$

and write a subtraction equation.

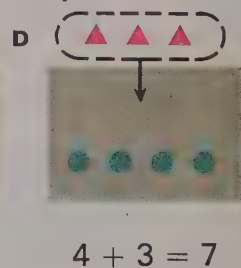
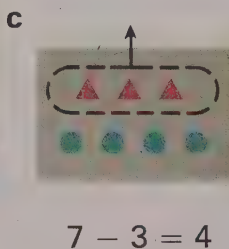
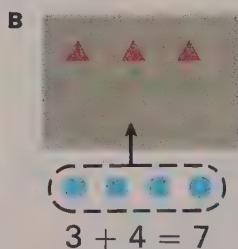
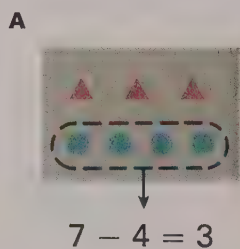


Can you do this using different numbers of counters?

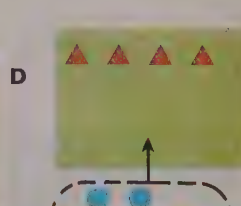
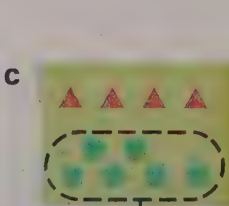
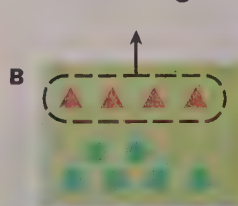
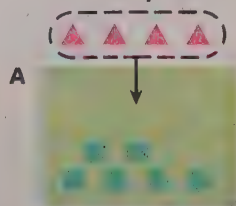
Write the equations.

Discussing the Ideas

1. In each part, tell how the picture helps explain the equation.



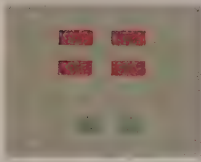
2. Write an equation for each figure.



Using the Ideas

1. Write four different equations for each set.

Example:



Answer:

$$4 + 2 = 6$$

$$6 - 2 = 4$$

$$2 + 4 = 6$$

$$6 - 4 = 2$$

A



B

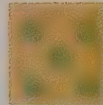


2. Answer the questions about the sets.

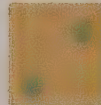
U



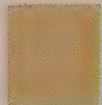
V



W



X



Y



Z

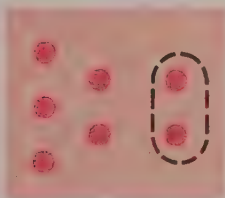


- How many dots in sets U and V together?
- How many dots in sets W and Y together?
- How many dots in sets V and Z together?
- How many dots in sets U and Y together?
- How many dots in sets W and X together?

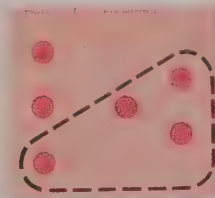
3. Write an addition equation for each part of exercise 2.

4. Think about removing the dots inside the dotted ring and write a subtraction equation for each set. Then think about putting the dots back inside the dotted ring and write an addition equation for each set.

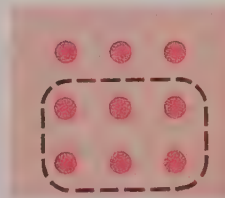
A



B



C



5. Write two addition and two subtraction equations using the numbers 4, 5, and 9.

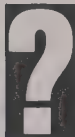
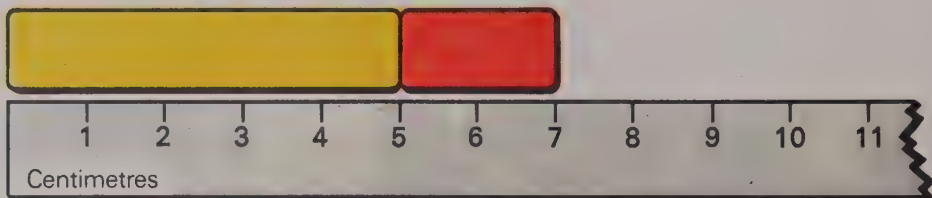
6. Use 5, 3, and one other number and write two addition and two subtraction equations.

Can the number line help you with addition and subtraction?

Investigating the Ideas

You can use your strips and your centimetre ruler to show addition.

$$5 + 2 = 7$$



How many other pairs of your strips can you use to add to 7?

Discussing the Ideas

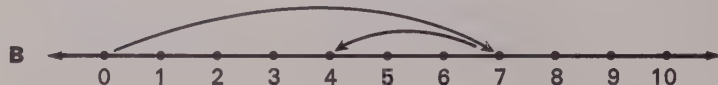
1. How can you use your strips and ruler to show the subtraction equation?

$$7 - 2 = 5$$

2. We can use **arrows** and a **number line** to show addition and subtraction instead of strips and a ruler. Give the missing number in the equation for each number line.

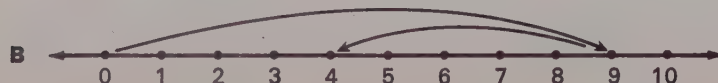
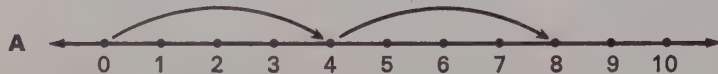


$$3 + 6 = n$$



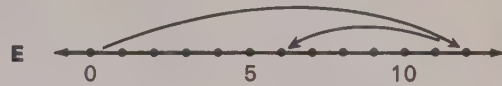
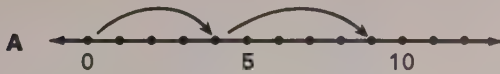
$$7 - 3 = n$$

3. What equation can you write for each number-line picture?

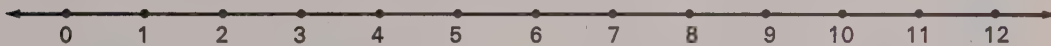


Using the Ideas

1. Write an equation for each number-line picture.



2. Draw a 12-centimetre line on your paper. Starting at the 0 dot, mark dots each 1 centimetre and label them as shown.

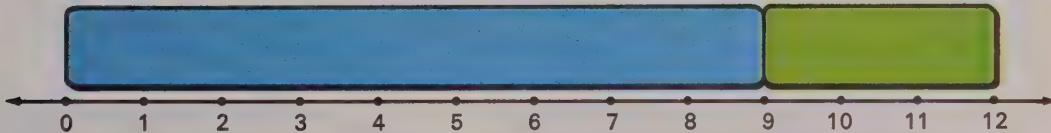


A Use arrows to show $5 + 6$.

B Show arrows for $11 - 9$.

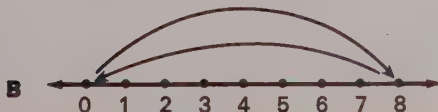
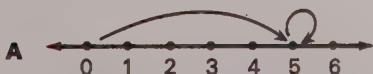
3. Write an equation for each part of exercise 2.

4. Write an addition equation for the picture.



5. Draw a number line and show the sum $3 + 3 + 3 + 3$.

- ★ 6. Write an equation for each number-line picture.



think



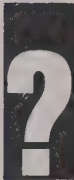
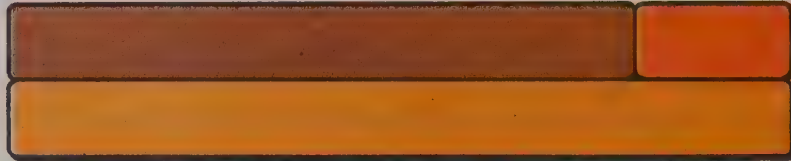
There is no largest number.
The last one can't be found.
Just add me to get the next.
There is no upper bound.

WHO AM I?

Investigating the Ideas

$$\begin{array}{ccccc} 8 & + & 2 & = & 10 \\ \text{Addend} & & \text{Addend} & & \text{Sum} \end{array}$$

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array} \quad \begin{array}{l} \text{Addend} \\ \text{Addend} \\ \text{Sum} \end{array}$$

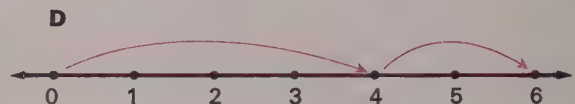
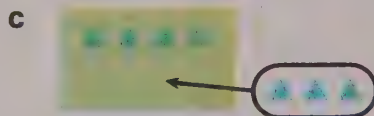
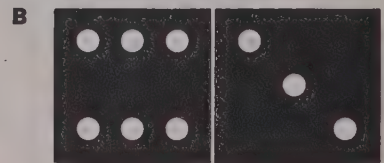


Can you use your strips to find other pairs of addends that will give a sum of 10?

Write an equation for each pair you find.

Discussing the Ideas

- Each picture suggests addition. Which numbers are addends? What is the sum?



- The sum is 8. One addend is 5. The other addend is 3. Explain how to write an addition equation for these three numbers.
- Use 2 as an addend as many times as you need to write an equation with a sum of 10.

- 1. The addends are given. Find the sums.**

$$\begin{array}{r} \text{A} \quad 3 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} c \quad 3 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 4 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ + 5 \\ \hline \end{array}$$

- 2. Solve the equations.**

A $5 + 4 = n$

c $2 + 6 = n$

$$\text{E } 4 + 5 = n$$

G $6 + 2 = n$

B $3 + 6 = n$




D $5 + 5 = n$

F $2 + 7 = n$





$$H \quad 8 + 2 = n$$

- 3. Give the missing numbers in the addition tables.**

		Add 2	
	5	7	
	3	5	
A	6		
B	4		




Add 4	
4	8
5	
3	
6	

Add 3	
7	10
5	
6	
4	





	Add 5	
I	2	
J	5	
K	3	
L	4	

- 4. Copy each addition table and give the missing numbers.**

A	+	5	4
	3	8	7
	2	7	

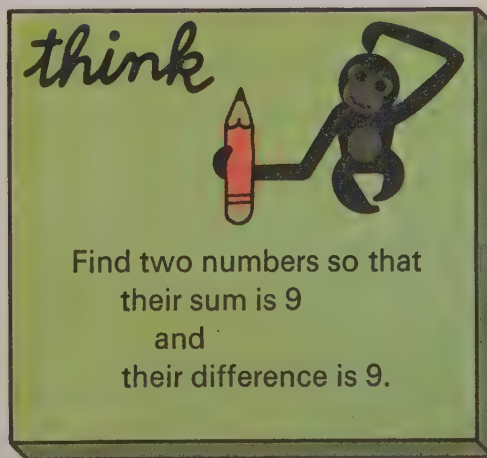
B	+	4	6
	4	8	
	3		

c	+	5	0
1			
4			

D	+	7	6
2			
3			

- 5. Give the missing numbers in the table.**

	Addend	Addend	Sum
A	3	2	5
	5	3	
B	4		6
	7		9
C		3	5
	3		8
D		4	10

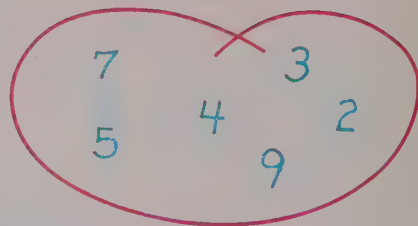


● Can you find differences by finding missing addends?

Investigating the Ideas

Find three numbers from the set so that

two are **addends**
and
the other is their **sum**.



Can you use your numbers to write two addition equations **and** two subtraction equations?

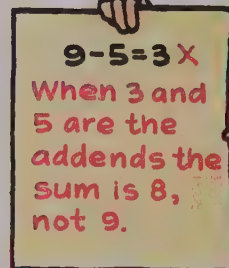
Discussing the Ideas

1. The letters **A** and **S** help you think about **addends** and their **sum**.

$$\begin{array}{ccc} \text{A} & \text{A} & \text{S} \\ 6 + 2 = 8 \end{array}$$

- A Write another addition equation using these numbers.
- B Write two subtraction equations using these numbers.

2. The third-grade children checked their arithmetic papers. Kristy checked Jay's paper. Under one exercise, she wrote



- A Explain what Kristy was trying to tell Jay.
- B What do you think Kristy would say about these exercises?

$$8 - 3 = 4$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline 2 \end{array}$$

1. Find the missing addends.

A $n + 4 = 7$

E $n + 4 = 8$

I $n + 0 = 8$

B $n + 3 = 10$

F $n + 5 = 10$

J $n + 7 = 10$

C $n + 4 = 9$

G $n + 6 = 9$

K $n + 4 = 5$

D $n + 6 = 10$

H $n + 1 = 7$

L $n + 3 = 9$

2. Find the differences by thinking about missing addends.

Think
 $? + 4 = 7$

A $7 - 4 = n$

D $10 - 6 = n$

G $8 - 4 = n$

J $10 - 5 = n$

Think
 $? + 3 = 10$

B $10 - 3 = n$

E $9 - 6 = n$

H $7 - 1 = n$

K $8 - 0 = n$

Think
 $? + 4 = 9$

C $9 - 4 = n$

F $10 - 7 = n$

I $5 - 4 = n$

L $9 - 3 = n$

3. Give the missing numbers. Check your answer.

7	-3	4	+2	6	-4	A	+8	B	-1	C	-5	4
---	----	---	----	---	----	---	----	---	----	---	----	---

2	+6	8	+2	10	-9	D	+4	E	+2	F	-7	0
---	----	---	----	----	----	---	----	---	----	---	----	---

4. Find the differences. Check your answers.

A 10
 -6

B 10
 -3

C 8
 -2

D 6
 -3

E 7
 -3

F 5
 -5

G 9
 -3

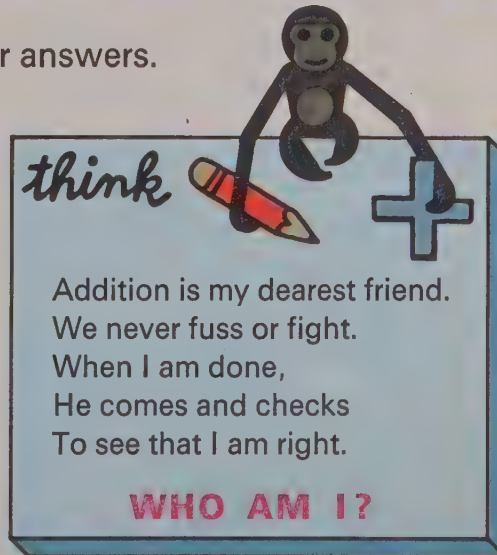
H 8
 -1

I 6
 -0

J 9
 -5

K 10
 -7

L 10
 -5



think

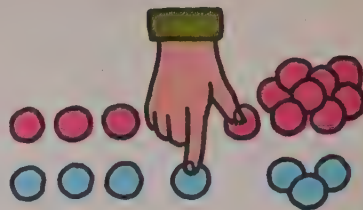
Addition is my dearest friend.
We never fuss or fight.
When I am done,
He comes and checks
To see that I am right.

WHO AM I?

Investigating the Ideas

Choose one pile of 12 counters and a second pile of 7 counters.

Match the counters from the piles one-to-one until one pile is used up.



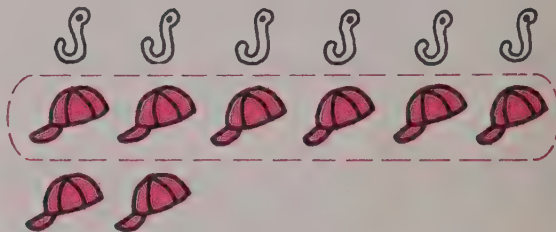
?

Can you copy and complete this equation about the piles? It tells how many counters were not matched.

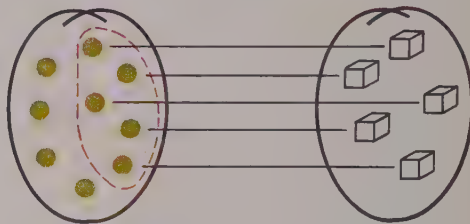
$$12 - 7 = ?$$

Discussing the Ideas

1. How many more caps are there than hooks? By matching we see there are |||| more caps than hooks. Here is the subtraction equation: $8 - 6 = n$



2. How many more balls are there than blocks? The matching lines show there are |||| more balls than blocks. Also, you can use subtraction. $9 - 5 = n$



3. For each pair of sets, there are more black dots than red dots. Write a subtraction equation for each pair to tell how many more black dots.

Example:



Equation:

$$6 - 4 = 2$$

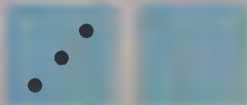
A



B



C



D



Collecting Shells

Using the Ideas



Nan collects shells. She also collects facts about shells.

Page 1 in her notebook looked like this.

Knife handles are made from shells.

Buttons are made from shells.

Some shells are used to make roads.

Some windows are made of shells instead of glass.

Some people use shells for money.

Some shells are very pretty.



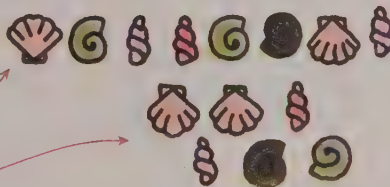
Tree-snail shells



- Nan collected 5 tree-snail shells and 3 clam shells. How many more tree-snail shells does she have than clam shells?



- Nan and Jill went to the beach to look for shells. Nan placed her shells in a row like this. Jill placed her shells like this.



- A Who had more shells? B How many more?

- Nan found 9 mussel shells beside a river. She gave 4 of them to Jill. How many did Nan have left?
- Nan wants pictures of her shells. She has 9 different snail shells. She has pictures of 7 of them. How many more pictures does she need?
- Nan took 8 colored shells to school. She had 3 colored shells at home. She had fewer colored shells at home than at school. How many fewer?
- Jill had 4 blue shells and 3 white shells in a box. She gave Nan 5 of these shells. How many shells are left?

Discussing the Ideas

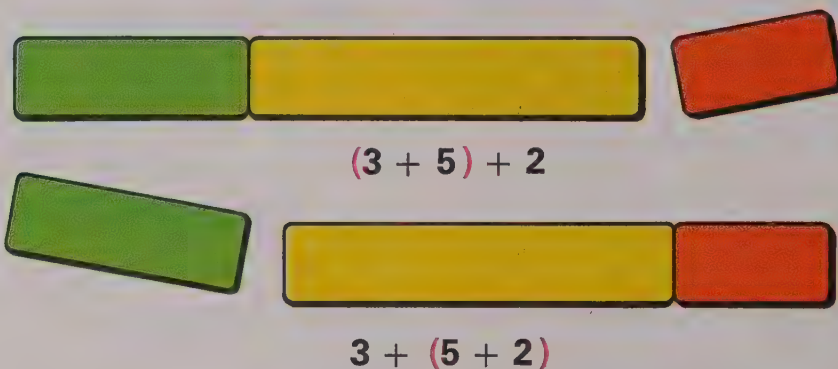
1. Follow a 4-strip with a 3-strip. Then follow a 3-strip with a 4-strip.



- a Do the trains match?
 b Try this again using other strips. What do you find?
 c Complete this sentence about the order principle.

When we change the ___?___ of the ___?___,
 we get the same sum.

2. a Do the two trains below match? Explain the grouping.



- b Addends: 4, 5, 7. The arrows tell what to add first.

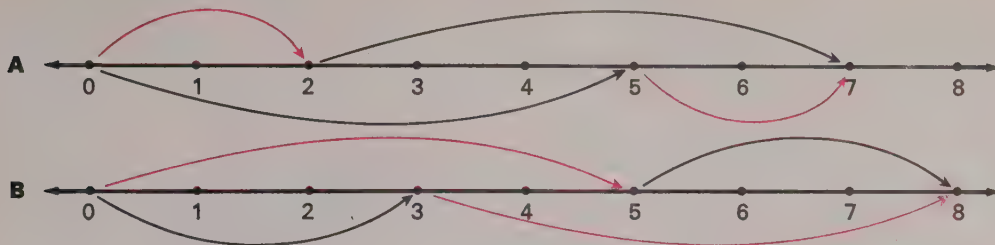
$$(4 + 5) + 7 \stackrel{?}{=} 4 + (5 + 7)$$

Are the two sums equal?

- c Complete this sentence about the grouping principle.

When we change the ___?___ of the ___?___,
 we get the same sum.

1. The number line in part **A** shows that $2 + 5 = 5 + 2$.
What does the number line in part **B** show?



2. Solve the equations.

A $4 + 6 = 6 + n$

D $7 + 9 = n + 7$

B $5 + n = 3 + 5$

E $327 + n = 22 + 327$

C $n + 8 = 8 + 9$

F $9856 + 6542 = n + 9856$

3. Give the missing number.

IF $137 + 387 = 524$

THEN $387 + 137 = n$

4. Find the sums. Use the grouping shown by arrows.

A $\{1, 5, 2\}$

C $\{1, 5, 2\}$

E $\{2, 4, 1\}$

G $\{2, 4, 1\}$

B $\{3, 4, 2\}$

D $\{3, 4, 2\}$

F $\{5, 3, 2\}$

H $\{5, 3, 2\}$

5. The last two addends are grouped in the problems below. By changing the grouping, you can find the same sum more easily. Do this.

A $7 + (3 + 5)$

C $999 + (1 + 235)$

E $6 + (4 + 8321)$

B $78 + (2 + 6)$

D $99 + (1 + 532)$

F $7 + (3 + 8267)$

6. Find the sums.

A **IF** $(35 + 27) + 68 = 130$

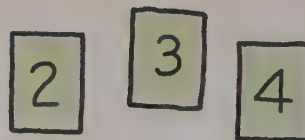
THEN $35 + (27 + 68) = n.$

B **IF** $(56 + 39) + 28 = 123$

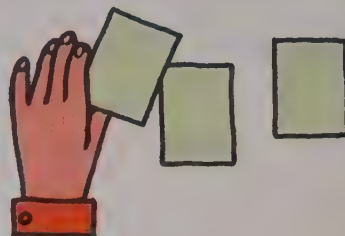
THEN $56 + (39 + 28) = n.$

Investigating the Ideas

Make three slips of paper like these. Then turn them over and mix them up.



Pick any two slips and add the numbers on them. Then add the number on the other slip.



If you do this five times, will you get the same sum each time?

Discussing the Ideas

1. In the Investigation you might have picked the pair **2**, **4** first. What other pairs might you have picked?

2. With the three addends 2, 3, and 4, we could

A add these first.

2 3 4

$$(2 + 3) + 4$$

B add these first.

2 3 4

$$2 + (3 + 4)$$

C add these first.

2 3 4

$$(2 + 4) + 3$$

Answer these questions for **A**, **B**, and **C**:

Which two addends are grouped together?

What is their sum? What is the total sum?

3. We can add any two numbers first. Which two would you add first in the problem $6 + 8 + 4$? Why?

Using the Ideas

1. Solve these equations for addends **2 3 5**

A $(2 + 3) + 5 = n$

C $(3 + 5) + 2 = n$

B $(5 + 2) + 3 = n$

D $(2 + 5) + 3 = n$

2. However we order or group,

A when the addends are **2 4 3**, the sum is ||||| .

B when the addends are **4 1 2**, the sum is ||||| .

C when the addends are **2 5 0**, the sum is ||||| .

3. Find the sums. **Look for tens.**

A $7 + 3 + 2$

E $5 + 6 + 5$

I $6 + 3 + 1$

M $10 + 0 + 8$

B $7 + 2 + 3$

F $4 + 6 + 9$

J $5 + 2 + 8$

N $2 + 5 + 2$

C $9 + 8 + 1$

G $7 + 8 + 2$

K $8 + 5 + 2$

O $3 + 5 + 5$

D $6 + 2 + 4$

H $5 + 7 + 3$

L $9 + 5 + 5$

P $1 + 6 + 9$

4. Find the sums. **Look for tens.**

A	8	B	4	C	4	D	7	E	9	F	8	G	6	H	4
	2		2		8		5		9		2		0		6
	<u>+4</u>		<u>+8</u>		<u>+2</u>		<u>+3</u>		<u>+1</u>		<u>+8</u>		<u>+4</u>		<u>+9</u>

5. Find the sums. **Look for tens.**

A $2 + 8 + 3 + 4$

D $2 + 3 + 4 + 8$

G $4 + 3 + 3 + 6$

B $2 + 3 + 8 + 4$

E $4 + 6 + 3 + 3$

H $7 + 4 + 3 + 5$

C $9 + 5 + 1 + 5$

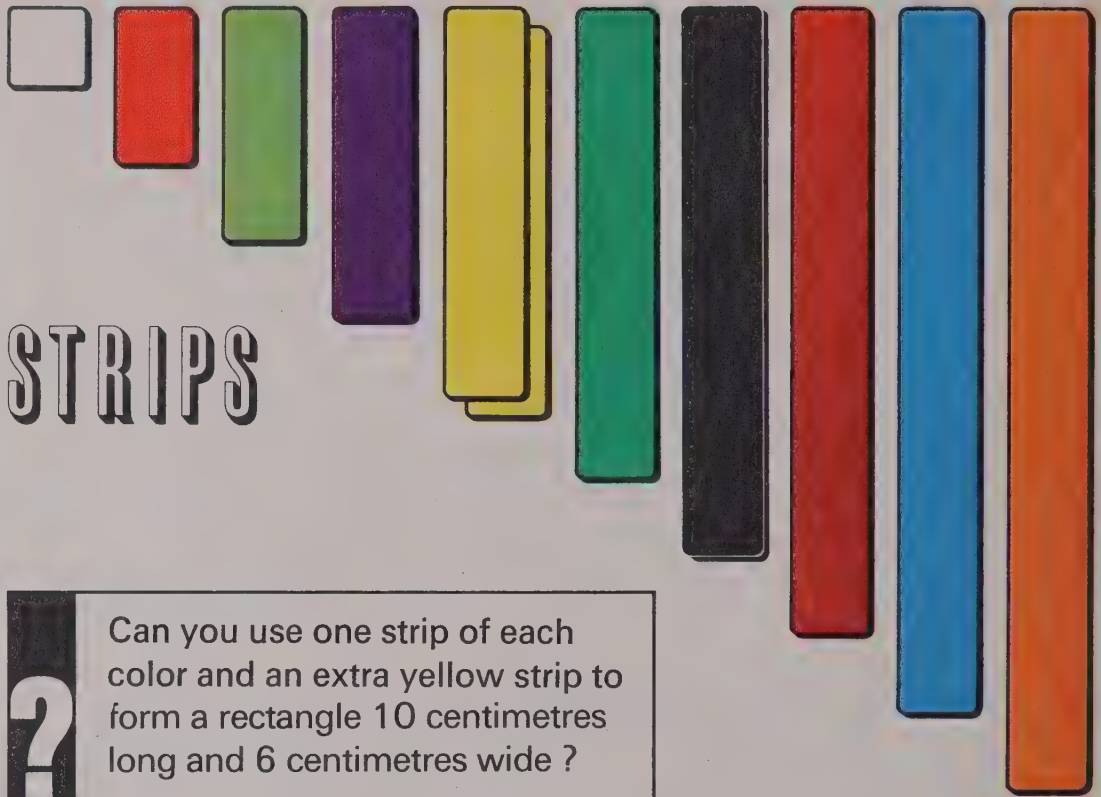
F $2 + 4 + 8 + 2$

I $7 + 6 + 2 + 4$

6. Find the sums. **Look for tens.**

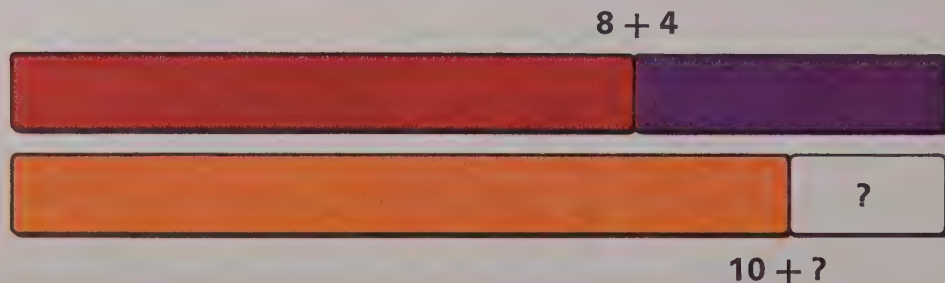
A	9	B	8	C	5	D	6	E	6	F	7	G	6
	7		2		7		4		7		5		5
	1		3		3		7		4		3		4
	<u>+2</u>		<u>+1</u>		<u>+2</u>		<u>+3</u>		<u>+3</u>		<u>+3</u>		<u>+5</u>

Investigating the Ideas



Discussing the Ideas

1. Give some equations suggested by rows of the rectangle.
2. A Give the missing number for the picture below.



- B Can you show some other "larger facts" using your strips ?

1. Find the missing numbers. Then give the sums.

- A $8 + 6 = 10 + n$ D $7 + 5 = 10 + n$ G $6 + 5 = 10 + n$
 B $9 + 4 = 10 + n$ E $9 + 6 = 10 + n$ H $6 + 6 = 10 + n$
 C $8 + 5 = 10 + n$ F $9 + 3 = 10 + n$ I $6 + 7 = 10 + n$

2. The **double** of 9 is 18 because $9 + 9 = 18$.

Find the double of each number.

- A 4 B 6 C 3 D 7 E 5 F 2 G 8

3. What number doubled gives each of these numbers?

- A 10 B 6 C 14 D 8 E 18 F 16 G 2 H 0

4. Read each exercise carefully. Then give the sum.

- A Because $4 + 4 = 8$, we know that $4 + 5 = n$.
 B Because $7 + 7 = 14$, we know that $7 + 6 = n$.
 C Because $5 + 5 = 10$, we know that $5 + 6 = n$.
 D Because $6 + 6 = 12$, we know that $6 + 7 = n$.
 E Because $8 + 8 = 16$, we know that $8 + 9 = n$.

5. Find the sums.

- | | | | | | | | |
|---|-----------|---|-----------|---|-----------|---|-----------|
| A | 2 | B | 6 | C | 9 | D | 7 |
| | <u>+8</u> | | <u>+3</u> | | <u>+4</u> | | <u>+6</u> |
| | | | | | | | |
| E | 8 | F | 4 | G | 7 | H | 9 |
| | <u>+1</u> | | <u>+6</u> | | <u>+2</u> | | <u>+8</u> |
| | | | | | | | |
| I | 7 | J | 2 | K | 8 | L | 7 |
| | <u>+7</u> | | <u>+7</u> | | <u>+3</u> | | <u>+8</u> |

6. Give the sums.

- | | | | | | | | |
|---|-----------|---|-----------|---|-----------|---|-----------|
| A | 3 | B | 5 | C | 5 | D | 5 |
| | 4 | | 3 | | 1 | | 4 |
| | <u>+5</u> | | <u>+7</u> | | <u>+9</u> | | <u>+6</u> |

think



I'm quite a tiny number.
 So very small indeed.
 If you add me to another,
 A change you cannot read.

WHO AM I?

Discussing the Ideas

You can find
differences
if you can find
missing addends.

$$\begin{array}{ccc} \text{S} & \text{A} & \text{A} \\ 13 - 5 = & n \end{array}$$



1. When the sum is 13 and one addend is 5, how can you find the other addend?
2. Read each sentence aloud and give the difference.

A A S

S A A

- Because $6 + 7 = 13$, we know that $13 - 7 = n$.
 - Because $8 + 7 = 15$, we know that $15 - 7 = n$.
 - Because $9 + 5 = 14$, we know that $14 - 5 = n$.
 - Because $8 + 6 = 14$, we know that $14 - 6 = n$.
3. Give the difference and explain how you know it is correct.
 - Because $48 + 37 = 85$, we know that $85 - 37 = n$.
 - Because $76 + 88 = 164$, we know that $164 - 88 = n$.
 - Because $57 + 19 = 76$, we know that $76 - 19 = n$.
 4. Give the missing number and explain how it helps you find the difference.
 - To find $15 - 7$, it helps to think $n + 7 = 15$.
 - To find $17 - 9$, it helps to think $n + 9 = 17$.
 - To find $14 - 6$, it helps to think $n + 6 = 14$.
 - To find $12 - 7$, it helps to think $n + 7 = 12$.

1. Find the differences.

A $12 - 4 = n$

D $14 - 5 = n$

G $16 - 9 = n$

B $11 - 5 = n$

E $14 - 7 = n$

H $12 - 6 = n$

C $13 - 6 = n$

F $15 - 8 = n$

I $11 - 8 = n$

2. Find the sums and differences. Use any method you choose.

A	8	B	9	C	8	D	7	E	12	F	14	G	7	H	8
	<u>+2</u>		<u>-6</u>		<u>+7</u>		<u>+6</u>		<u>-3</u>		<u>-6</u>		<u>+8</u>		<u>+0</u>

I	13	J	13	K	6	L	17	M	18	N	6	O	5	P	7
	<u>-4</u>		<u>-5</u>		<u>+6</u>		<u>-7</u>		<u>-9</u>		<u>+8</u>		<u>+5</u>		<u>+3</u>

Q	10	R	10	S	9	T	15	U	8	V	9	W	16	X	14
	<u>-4</u>		<u>+8</u>		<u>+7</u>		<u>-7</u>		<u>+8</u>		<u>+9</u>		<u>-6</u>		<u>-9</u>

Short Stories

1 5 merit badges.
Need 14 in all.
How many more needed?

2 13 balloons. Stick 8 with a pin. How many left?



3 16 flies.
7 frogs.
Each frog gets a fly.
How many flies are left?



4 12 peanuts. Ate 2 and drank milk.
Ate 5 more. How many left?

5 Caught 17 fish.
9 too small so threw them back.
How many left?

6 Caught 12 butterflies.
7 got away.
How many left?



7 17 papers. Want to sell all but 10. How many must be sold?

8 Gave 8 valentines.
Received 17 valentines.
Gave how many fewer than received?

Investigating the Ideas

Tom thought of a rule.

When Jane said 3, Tom answered 5.

When Jane said 8, Tom answered 10.

When Jane said 5, Tom answered 7.

When Jane said 2, Tom answered 4.

Jane tried to figure out what rule Tom was using.



Dick thought of a rule.

When Sue said 2, Dick answered 4.

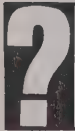
When Sue said 5, Dick answered 10.

When Sue said 8, Dick answered 16.

Sue said 9. Dick answered 18.

Sue thought, "What did Dick do to my number to get his number?"


What rules were the boys using?



Make up a rule of your own and play "What's My Rule" with a classmate. Can you guess each other's rules?

Discussing the Ideas

1. How would you keep a record of what happened in a game of What's My Rule?
2. Show a record of an imaginary game, but leave out the last answer. Can your classmates give the answer?

Study the tables carefully. Guess the rule, then give what you think should go in each .

1.	Carol's number	Jill's answer	2.	Cindy's number	Nan's answer	★ 3.	Cathy's number	Susan's answer
	4	14		8	1		2	0
	6	16		7	0		4	0
	2	12		10	3		3	1
A	7		A	9			5	1
B	9		B		6		8	0
C		13	C		8	A	6	
D	24		D		10	B	11	

4. Choose a rule and make a table to show what might happen when you play What's My Rule.

5. Jane and Brenda played a game. Try to solve their puzzles.

A I'm thinking of a number. If you add 6 to it, you get 10.
What is the number?

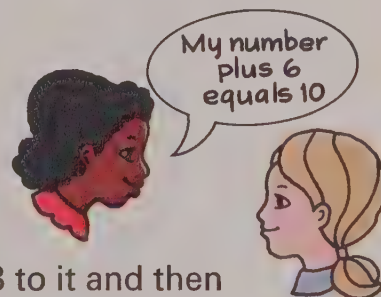
B I'm thinking of a number. If you add it to 4, you get 8. What is the number?

C I'm thinking of a number. If you add 3 to it and then add 2, you get 10. What is the number?

D I'm thinking of a number. If you subtract 5 from it, you get 10. What is the number?

E If you subtract 6 from a number and then subtract 2, you get 8. What is the number?

★ F I'm thinking of a number. If you add it to itself and then add 4, you get 10. What is the number?

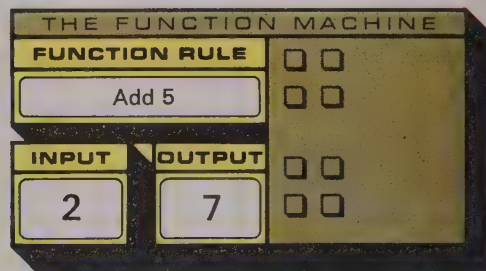
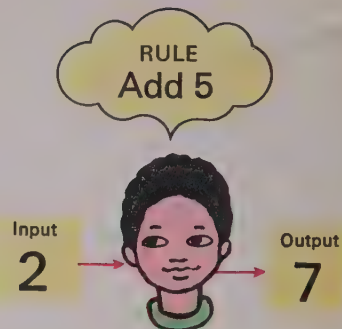


Discussing the Ideas

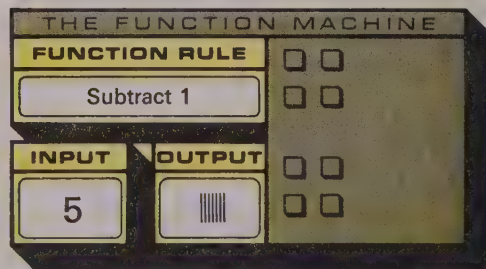
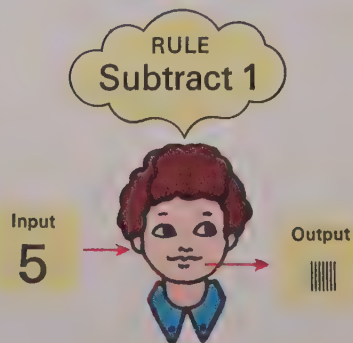
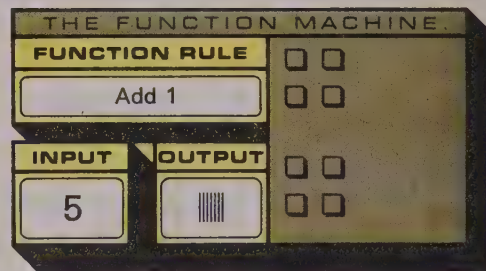
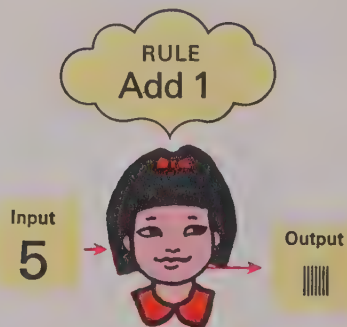
- Study the pictures and explain how you think the function machine works. A record of the operations of the function machine is shown below. What are the missing numbers?

Function Rule

Add 5	
Input	Output
2	7
4	9
3	
6	



- Find each output number. Explain how the function machine is like the student playing the What's My Rule game.



Think about the function machine and tell what you think should go in each gray space.

1.

Function Rule

Add 5

Input Output

	2	7
	4	9
A	1	
B	5	
C	3	

2.

Function Rule

Subtract 3

Input Output

A	6	
B	8	
C	10	
D	3	
E	13	

3.

Function Rule

Add 4

Input Output

A	2	
B	4	
C	7	
D	8	
E		13

4.

Function Rule

Subtract 2

Input Output

	3	1
A	7	
B		3
C	10	
D		10

5.

Function Rule

Subtract 8

Input Output

	10	2
A	13	
B	15	
C		3
D	17	

6.

Function Rule

If odd, subtr. 1
If even, add 0

Input Output

	3	2
	5	4
A	9	
B	8	

7.

Function Rule

Input Output

	7	1
	10	4
	6	0
B	9	
C		8

8.

Function Rule

Input Output

	2	10
	5	13
	7	15
B	3	
C		17

9.

Function Rule

Input Output

	0	9
	1	10
	9	18
B	7	
C	5	



1. Write 2 addition and 2 subtraction equations for each set.



2. Find the sums and differences.

A	8	B	6	C	9	D	2	E	10	F	7	G	6	H	4
	+2		+3		-4		+5		-4		-3		+4		+4

I	7	J	8	K	0	L	8	M	10	N	4	O	10	P	3
	-5		-5		+6		-2		-6		+5		-3		+5

3. Find the differences.

A	$7 - 3 = n$	E	$12 - 9 = n$
B	$13 - 9 = n$	F	$16 - 8 = n$
C	$11 - 3 = n$	G	$13 - 6 = n$
D	$15 - 7 = n$	H	$14 - 7 = n$

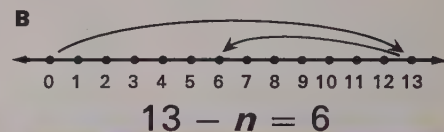
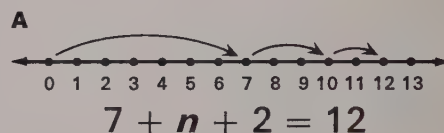
4. Find the sums. Look for a sum of 10.

A	$6 + 4 + 7$	E	$4 + 6 + 5$
B	$8 + 7 + 3$	F	$7 + 8 + 3$
C	$8 + 9 + 2$	G	$6 + 2 + 8$
D	$5 + 7 + 5$	H	$9 + 8 + 1$

5. Find the missing numbers.

A	If $47 + 38 = 85$, then $85 - 38 = n$.
B	If $92 - 18 = 74$, then $74 + 18 = n$.
C	$27 + 68 = 68 + n$.
D	$(39 + 27) + 68 = 39 + (n + 68)$

6. Use the number line to help you solve each equation.



think

Increase me by 5.
Then take away 7.
When you are done,
You should have 11.

WHO AM I?

1. Write the missing numerals.

A For 3 tens and 6, we write |||| .

C For 7 tens and 4, we write |||| .

B For 5 tens and 0, we write |||| .

D 46 means |||| tens and 6.

2. Give the missing words.

A In 1847, the 4 means four $_\ ? _\$. C In 2584, the 5 means five $_\ ? _\$.

B In 6253, the 6 means six $_\ ? _\$. D In 3475, the 7 means seven $_\ ? _\$.

3. Solve the equations.

A $63 = 60 + n$

C $18 = n + 8$

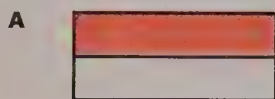
E $80 + 0 = n$

B $10 + 7 = n$

D $70 = 70 + n$

F $30 + 4 = n$

4. Write a fraction for the part of each region that is shaded.



5. In each pair, which number is larger?

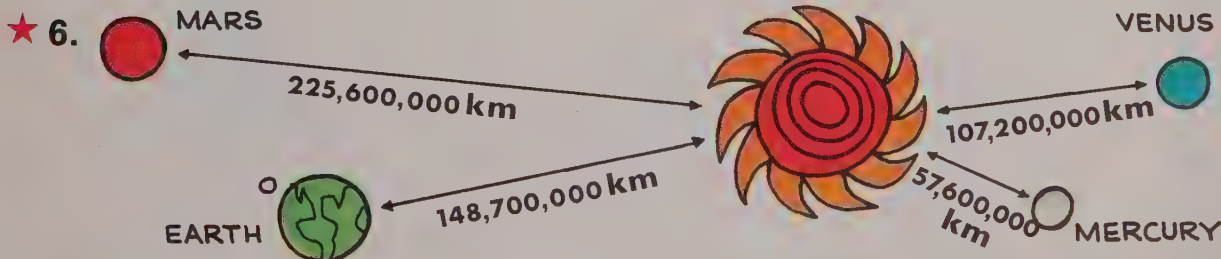
A 624
621

B 283
300

C 4284
4384

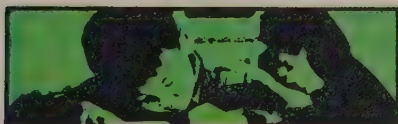
D 9999
10 000

E 26 354
26 364



A Which of these planets is farthest from the sun?

B Which of these planets is closest to the sun?



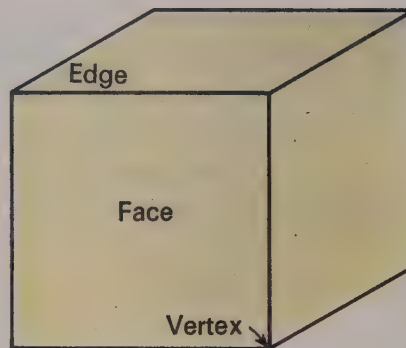
You are invited to explore

**ACTIVITY
CARD 2**
Page 310

● *Let's count edges, faces, and vertices.*

Investigating the Ideas

A cube has "straight" **edges**, "flat" **faces**, and "pointed" **vertices**.



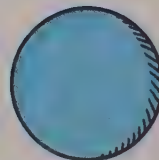
A cube



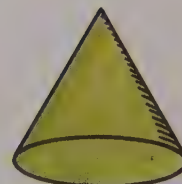
Can you find how many of each?

Discussing the Ideas

1. Can you name another object that has edges, faces, and vertices?
2. A **sphere** (ball) has no edges and no vertices. It has a "curved" **surface**. Can you name another object that has no edges or vertices?
3. A **cone** has a **curved edge**.
 - A How many vertices and flat faces does it have?
 - B Can you name another object with a curved edge?



A sphere



A cone

A



D



B



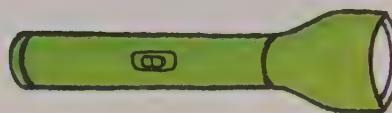
E



C



F



G



1. Name at least one figure above which has

A no edges.

B only straight edges.

C only curved edges.

D both straight and curved edges.

E no vertices.

F only one vertex.

G more than one vertex.

H only flat faces.

I a curved face or surface.

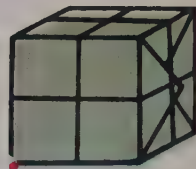
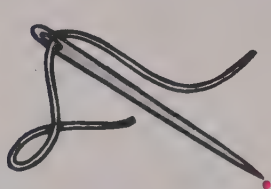
J both flat and curved surfaces.

K curved edges and both flat and curved surfaces.

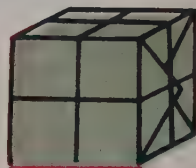
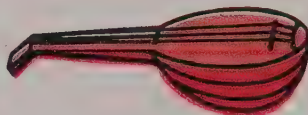
★ 2. Which figure has more than one vertex, both flat and curved surfaces, and both straight and curved edges?

Discussing the Ideas

1. These figures suggest **points** •
Can you think of others?



2. These figures suggest **line segments** —
Can you think of others?



3. A beam of light suggests a **ray** — . A ray has one endpoint and "goes on and on" in one direction.
Can you think of other examples of rays?

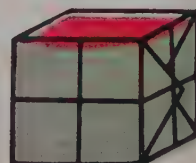


4. The boy looking in opposite directions suggests a **line** — . A line has no endpoints and "goes on and on" in both directions.
What other situations suggest lines?



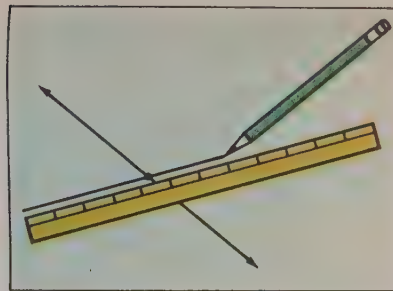
5. These pictures suggest

planes —
Can you think of others?

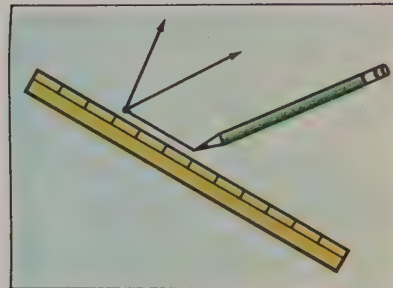


Using the Ideas

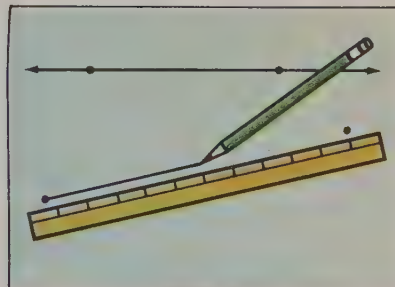
1. Mark a **point** on your paper.
Use your ruler to draw 5 different **lines** that pass through that point.



2. Mark a point on your paper. Use your ruler to draw 3 different **rays** from that point.

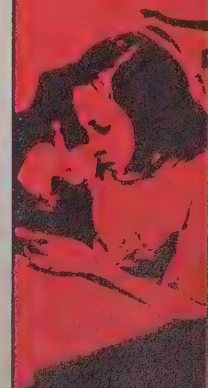


3. **A** Mark two points on your paper.
Use your ruler to draw **the line** that passes through these two points.
B Mark two other points on your paper. Draw **the line segment** for these points.



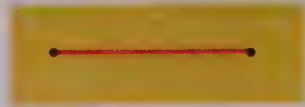
- ★ 4. Study the chart. Then draw and name a line, a ray, and a segment.

We see the figure	We label some points	We write a name for the figure	We say
		\overleftrightarrow{AB}	"line AB "
		\overrightarrow{PQ}	"ray PQ "
		\overline{CD}	"segment CD "

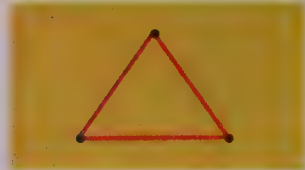


Investigating the Ideas

You can draw only one segment to connect 2 points.



You can draw three segments to connect 3 points.



How many segments can you draw to connect 4 points? Try it.

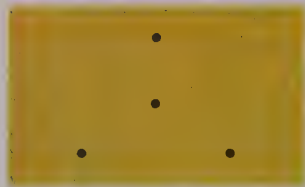


If 5 points are placed like this, how many segments can you draw to connect them?



Discussing the Ideas

- When 4 points are placed like this, how many segments do you think you can draw to connect them?



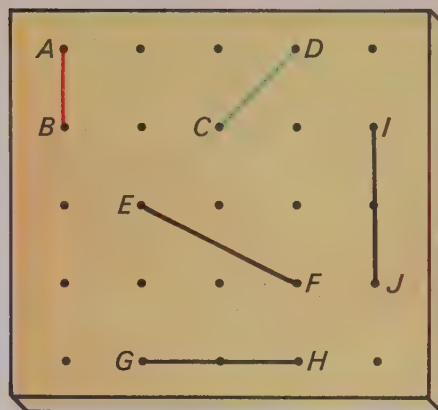
- This chart shows the number of segments that connect each set of points shown.

Points					
Segments	1	3	6		

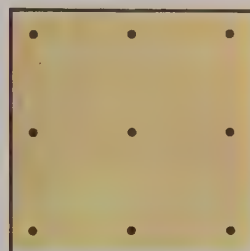
- How many segments did you get for 5 points?
- Guess how many segments you get for 6 points. Try it.

1. The red segment from A to B (\overline{AB}) is shorter than the blue segment from C to D (\overline{CD}). Use the picture of the nailboard for these questions.

- A Which segment is the longest?
- B Which segment is shortest?
- C Can you name a segment that is longer than \overline{AB} but shorter than \overline{GH} ?
- D Name two segments that have the same length.



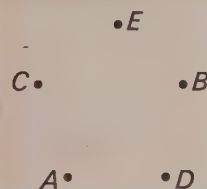
2. How many segments of different lengths can you show using only nine points like these?



3. Trace dots A , B , C , D , and E and connect them in this order.

$A B C D E A$

- A What figure did you make?
- B How many segments did you draw?



4. A Draw a figure using 4 segments.
B Draw a figure using 5 segments.

think

What was the starting number?

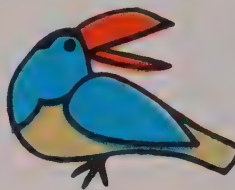
Investigating the Ideas

All of these objects are alike in some way.



?

Which of these objects are like the ones above?

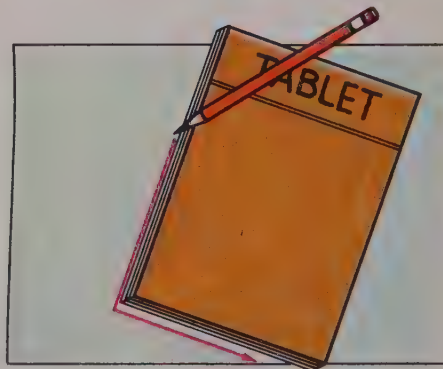


Discussing the Ideas

1. The compass suggests the idea of an **angle**. An angle is two rays with the same endpoint. Can you think of other things that suggest angles?



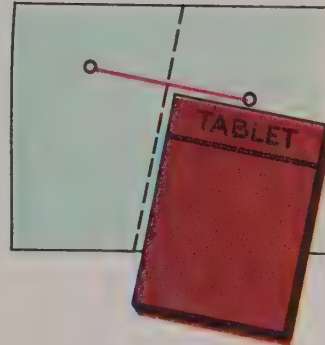
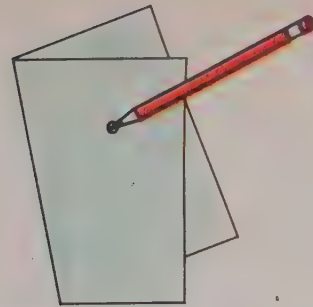
2. Draw an angle using the corner of your tablet. This special angle is called a **right angle**. Can you find some objects that suggest the idea of a right angle?



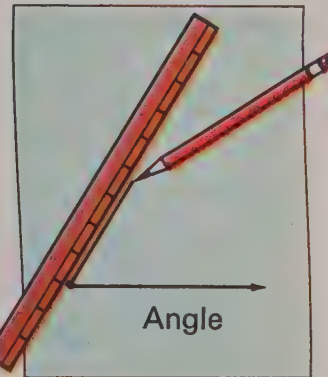
3. Can you find a way to fold a piece of paper so that some right angles are formed?

Using the Ideas

1. Follow these steps to form a right angle.
 - A Fold your paper any way you wish.
 - B Push your pencil point through both pieces of the folded paper.
 - C Open the paper and draw a line segment connecting the two holes in your paper.
 - D Use a corner of your tablet to see if the fold line and the line you drew form a right angle.



2. A Mark one point on your paper. Draw two rays from this point. The figure you have drawn shows an angle.
- B Draw four more angles. Make each one look different.



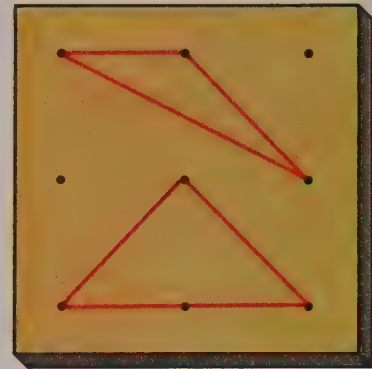
- ★ 3. Study the chart. Then name the angles you drew in exercise 2.

We see the angle	We label some points	We write a name for the figure	We say
		$\angle ABC$ or $\angle CBA$	"angle ABC" or "angle CBA"

Investigating the Ideas

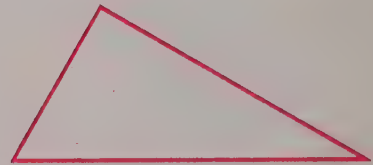
Two three-sided figures of different shapes are shown on the 3-by-3 geoboard.

? How many three-sided figures of different shapes can you draw on 3-by-3 dot paper?



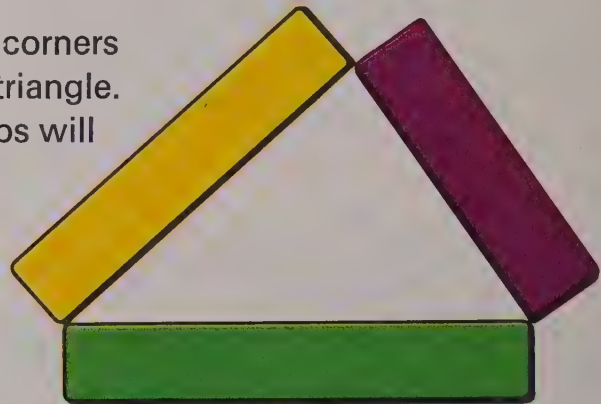
Discussing the Ideas

1. A closed figure like this one is called a triangle.
 - A A triangle has ___? ___ line segments.
 - B Can you name some objects that are in the shape of triangles?



2. The three strips have their corners placed together to form a triangle. Which of these sets of strips will not form a triangle?

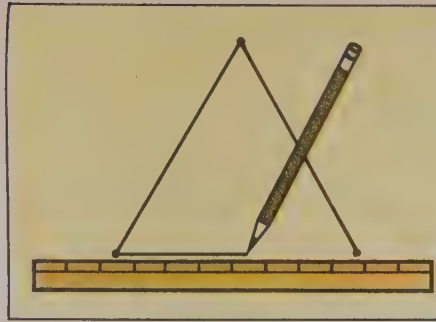
- A black, brown, and blue
- B yellow, orange, and light green
- C three yellow strips
- D red, yellow, and brown



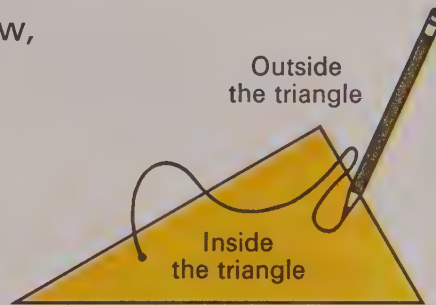
3. Suppose you drew a triangle using your light green, purple, and yellow strips and a classmate used the same strips to form a triangle. Do you think the two triangles would have the same size and shape?

Using the Ideas

1. Mark 3 points as in the figure. Draw line segments to connect those points.
 - A How many segments did you draw?
 - B What is the name of the figure you have drawn?



2. Draw four triangles. Make each one different.
3. Draw a triangle and mark a point inside the triangle. Put your pencil on the point and draw a path that crosses a side of the triangle.
 - A Where is your pencil point now, **inside** or **outside**?
 - B Cross again. Where is the pencil point now?
 - C If you cross 5 times in all, where are you?
 - D If you cross 8 times in all, where are you?



- ★ 4. Study the chart. Then name the triangles you drew in exercise 2.

We see the triangle	We label some points	We write a name for the triangle	We say
		$\triangle ABC$	"triangle ABC"

Investigating the Ideas

1. Draw a large triangle. Make the longest side at least 15 centimetres long.
2. Use two pencils and a paper clip to draw part of a circle at each corner. Color each corner a different color. Now cut out the triangle and cut off the colored corners.



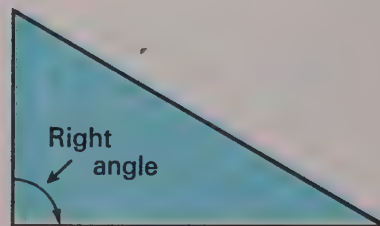
?

Draw a circle with your paper clip and pencils. How much of the circle do the three corners of the triangle fill if the edges touch but do not overlap?



Discussing the Ideas

1. How much of a circle can you fill with corners from two triangles?
2. A triangle that has one right angle is called a **right triangle**. Do you think the corners of a right triangle will fill half a circle?

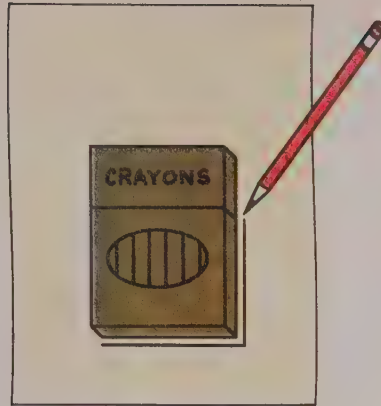


RIGHT TRIANGLE

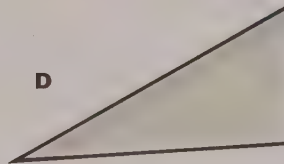
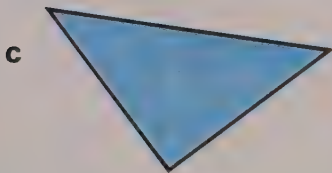
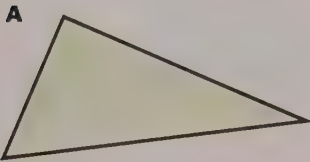
3. Can a triangle have two right angles? Explain.

Using the Ideas

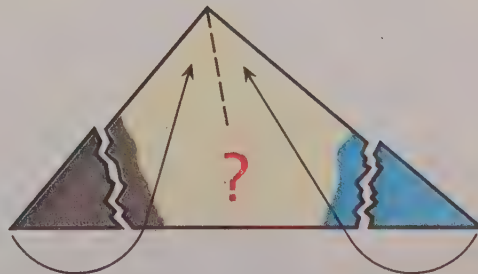
1. Use the corner of your tablet or crayon box and draw a **right triangle** on your paper.



2. Draw a right triangle that has two sides that are the same length.
3. Use the corner of a sheet of paper to help you decide which of these are right triangles.



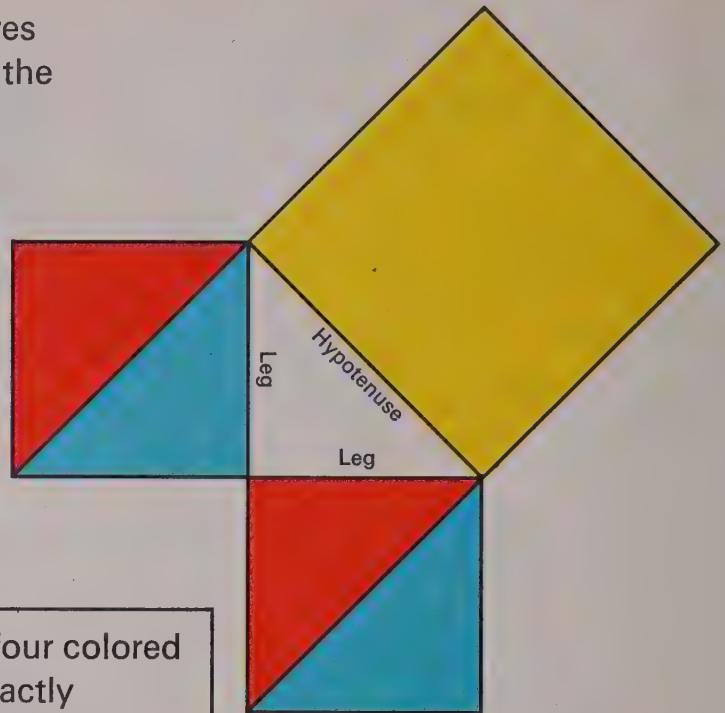
- ★ 4. Draw a right triangle and color the two angles that are not right angles different colors. Cut out the triangle and then cut off the colored corners. Will they fit exactly into the right angle without overlapping?



Investigating the Ideas

Trace the two small squares that have been drawn on the two legs of the right triangle.

Color and cut out the four small right triangles that form the two squares.

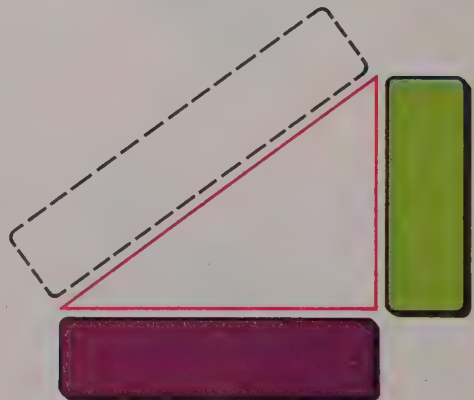


?

Can you make the four colored right triangles fit exactly into the large yellow square on the hypotenuse of the right triangle?

Discussing the Ideas

1. In what way are right triangles different from other triangles?
2. Which one of your strips fits in the dotted outline to complete the right triangle?
3. What strip could you use with your 6-strip and 8-strip to form a right triangle?



Using the Ideas

Use the four colored right triangles you cut out for the Investigation. Arrange the four triangles so that they exactly fit each figure. Draw a picture to show how you arranged the triangles for each figure.

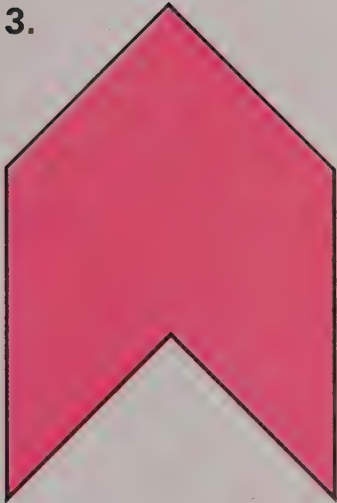
1.



2.



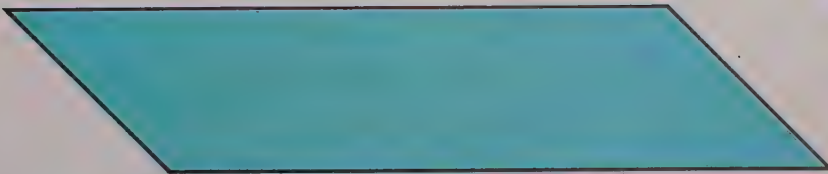
3.



4.



5.



1. **A** How many vertices (corners) does the box have?
- B** How many edges does the box have?
- C** How many faces does the box have?



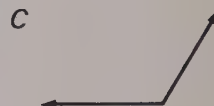
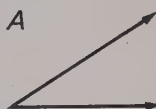
2. **A** Mark three points like *A*, *B*, and *C* on your paper.
- B** Draw a ray starting at *A* and going through *B*. Draw a ray starting at *A* and going through *C*.
- C** The name for the figure is ___? ___. (ray, angle, triangle)

A•

•*B*

C•

3. Which angle is a **right angle**?



4. Which triangle is a **right triangle**?



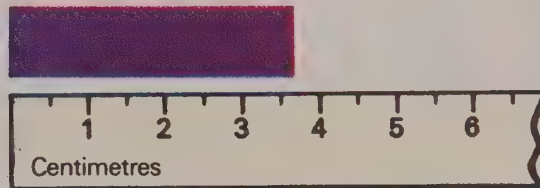
5. Trace these six points on your paper. How many segments can you draw to connect pairs of points?



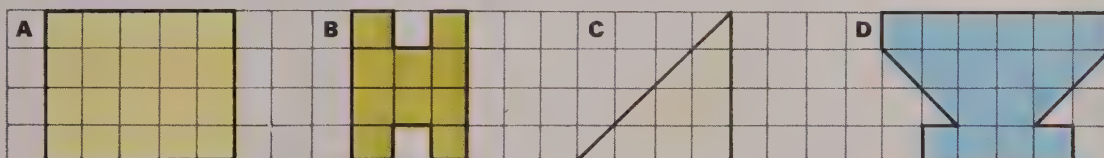
6. How many triangles are in the picture?



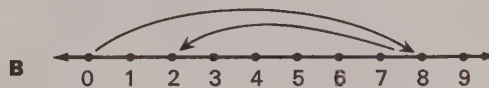
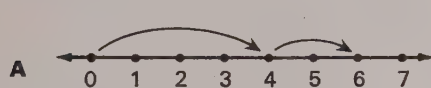
1. A Is the length of the bar closer to 3 centimetres or to 4 centimetres?
 B Is the bar nearer to $3\frac{1}{2}$ centimetres or to 4 centimetres?
 c To the nearest half centimetre, the bar is $3\frac{1}{2}$ centimetres long.



2. Using the unit shown, give the area of each region.



3. Write the numeral for each.
 A 4 tens and 7 ones
 B 8 hundreds, 9 tens, and 6 ones
 c seven hundred sixty-three
 D six thousand, two hundred eight
4. Write an equation for each number-line picture.



5. Find the missing addends.

A $n + 2 = 7$

c $3 + n = 10$

E $n + 1 = 6$

B $n + 5 = 9$

D $6 + n = 9$

F $3 + n = 8$

6. Find the differences.

A $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$

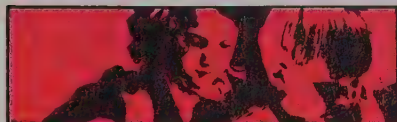
B $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$

C $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$

D $\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$

E $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$

F $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$



You are invited to explore

ACTIVITY
CARD 3
Page 310

Adding and Subtracting

● *How are dimes and pennies like tens and ones?*

Investigating the Ideas

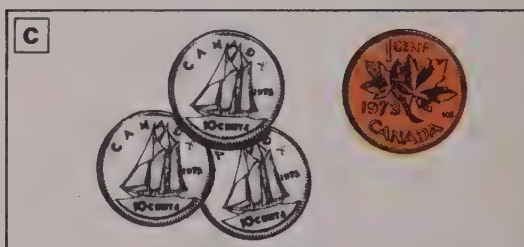
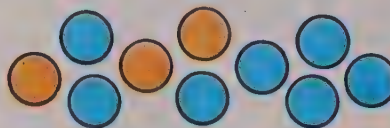
?

How many different amounts of money can you show if your "pennies" and "dimes" are these different-colored counters?



Discussing the Ideas

1. Why is it important to decide which counters are "dimes" and which are "pennies"?
2. If these counters are worth 37¢, which colored counters are dimes?
3. Which collection is worth more, A or B?
4. Which collection is worth more, C or D?



Using the Ideas

- Give the value of each of the two coin collections together.

A A and B	C C and D	E B and C
B A and C	D B and D	F A and D
- Which pair of collections has the greater value?

A A and B together or C and D together	B A and C together or B and D together
C A and D together or B and C together	D A and D together or B and D together
- | | |
|---|--|
| A Had 1 dime and 7 pennies.
Spent 5 cents.
How much left? | E Had 5 dimes and 9 pennies.
Spent 50 cents.
How much left? |
| B Had 2 dimes and 3 pennies.
Spent 1 dime and 3 cents.
How much left? | F Had 4 dimes and 8 pennies.
Spent 25 cents.
How much left? |
| C Had 6 dimes and 7 pennies.
Spent 5 dimes and 5 cents.
How much left? | G Had 76 cents.
Spent 56 cents.
How much left? |
| D Had 8 dimes and 2 pennies.
Spent 40 cents.
How much left? | H Had 79 cents.
Spent 43 cents.
How much left? |
- ★ How much more is in one collection than the other?



Investigating the Ideas

IF

the white strip



is 10

THEN

these strips



show that $20 + 30 = 50$

?

Can you use your strips to help you write some equations that have a sum of 80?

Discussing the Ideas

1. A 4 dimes together with 3 dimes make how many dimes?



- B 4 tens and 3 tens make how many tens?

C $4 + 3 = n$

D $40 + 30 = n$

2. A 5 bundles together with 4 bundles make how many bundles?



- B 5 tens and 4 tens make how many tens?

C $5 + 4 = n$

D $50 + 40 = n$

1. Find the sums.

A Since $7 + 2 = 9$, we know that $70 + 20 = n$.

B Since $2 + 5 = 7$, we know that $20 + 50 = n$.

C Since $6 + 4 = 10$, we know that $60 + 40 = n$.

D Since $7 + 5 = 12$, we know that $70 + 50 = n$.

E Since $8 + 7 = 15$, we know that $80 + 70 = n$.

2. Solve the equations.

A $60 + 10 = n$

C $40 + 30 = n$

E $50 + 60 = n$

B $50 + 40 = n$

D $30 + 30 = n$

F $70 + 60 = n$

3. Solve the equations.

A $30 + 0 = n$

C $30 + 2 = n$

E $40 + 8 = n$

B $30 + 1 = n$

D $30 + 7 = n$

F $60 + 4 = n$

4. Find the sums.

$$\begin{array}{r} \text{A} \quad 30 \\ + 60 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 40 \\ + 20 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 70 \\ + 20 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 70 \\ + 40 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 80 \\ + 50 \\ \hline \end{array}$$

5. Find the sums.

$$\begin{array}{r} \text{A} \quad 2 \\ 3 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 2 \\ 7 \\ + 1 \\ \hline \end{array}$$

6. Find the sums.

$$\begin{array}{r} \text{A} \quad 70 \\ 20 \\ + 50 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 60 \\ 40 \\ + 80 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 20 \\ 30 \\ 20 \\ + 10 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 40 \\ 20 \\ 10 \\ + 50 \\ \hline \end{array}$$

think



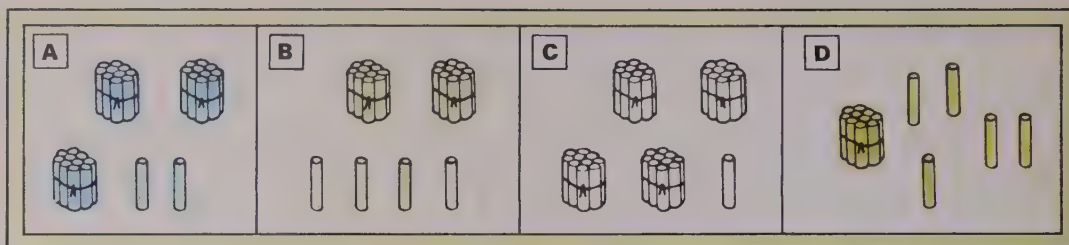
With 2 minutes to play,
this was the score.

Vanier	48
Beaverbrook	41

At the end of the game,
the score was 50 to 47.

WHO WON THE GAME?

Discussing the Ideas



1. How many sticks are in these sets? Explain your answers.

- A A and B together c A and C together e A and D together
B B and C together d C and D together f B and D together

2. Find the sums.

$$\begin{array}{r} \text{A} \quad 80 \quad 7 \\ +10 \quad +2 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ +12 \\ \hline \end{array}$$

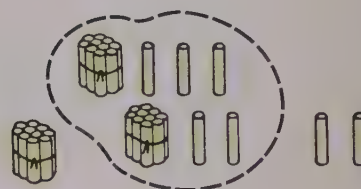
$$\begin{array}{r} \text{B} \quad 30 \quad 4 \\ +50 \quad +2 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ +52 \\ \hline \end{array}$$

3. Give an easy rule for finding this sum.

$$\begin{array}{r} 24 \\ +35 \\ \hline \end{array}$$

4. A How many sticks in all?
B How many sticks in the dotted ring?
c How many sticks not in the dotted ring?



5. Find the differences.

$$\begin{array}{r} \text{A} \quad 70 \quad 6 \\ -20 \quad -3 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 80 \quad 5 \\ -30 \quad -2 \\ \hline \end{array}$$

$$\begin{array}{r} 85 \\ -32 \\ \hline \end{array}$$

6. Give an easy rule for finding this difference.

$$\begin{array}{r} 67 \\ -42 \\ \hline \end{array}$$

1. Find the sums.

A	15	B	47	C	32	D	41	E	82	F	60	G	12
	<u>+42</u>		<u>+31</u>		<u>+65</u>		<u>+23</u>		<u>+14</u>		<u>+70</u>		<u>+73</u>

H	75	I	84	J	24	K	95	L	235	M	740	N	153
	<u>+53</u>		<u>+12</u>		<u>+65</u>		<u>+43</u>		<u>+162</u>		<u>+36</u>		<u>+842</u>

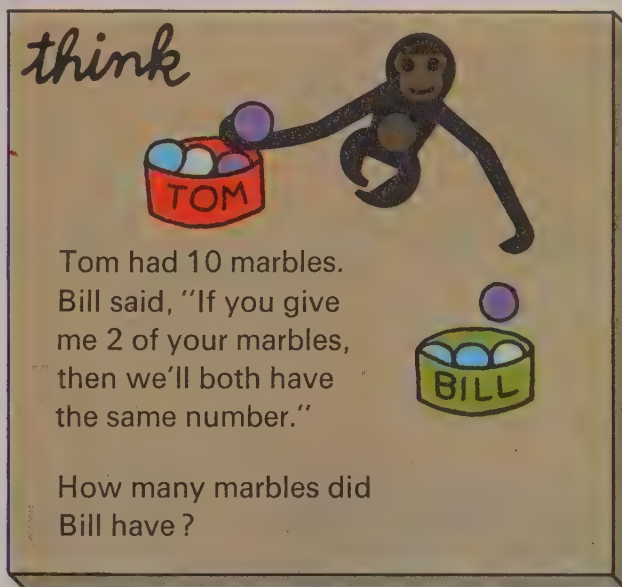
2. Find the differences.

A	78	B	93
	<u>-32</u>		<u>-41</u>

C	100	D	82
	<u>-90</u>		<u>-62</u>

E	648	F	739
	<u>-325</u>		<u>-516</u>

G	527	H	607
	<u>-524</u>		<u>-403</u>

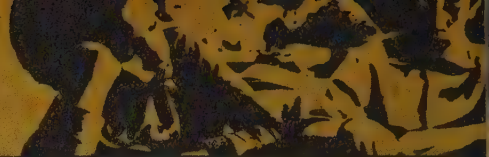


3. Jane checked out a library book on the thirteenth day of the month. She had to return the book in 14 days. What day was Jane's book due?

4. Tim started reading a science book on page 62. After he read 25 pages, where was he in the book?

5. Sue kept a record of the number of days it took her to read a book. How many days in all did it take for Sue to read books A, B, and C?

Book A	— — — — 12
Book B	— — — — 14
Book C	— — — — 13



1. Solve the equations.

A $38 = 30 + n$

B $56 = 50 + n$

C $70 + 2 = n$

D $80 + 3 = n$

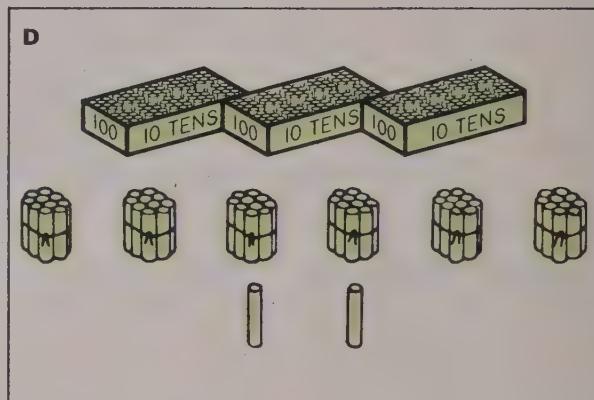
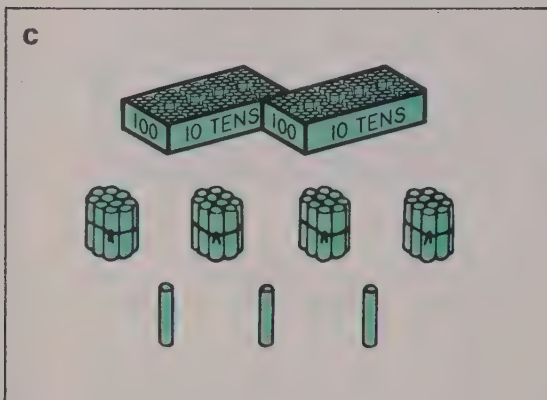
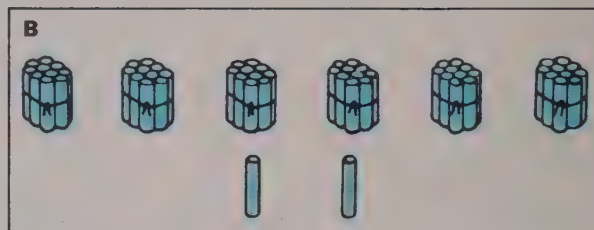
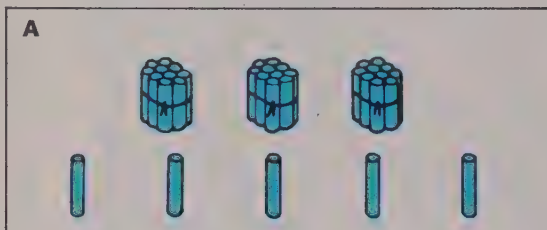
E $358 = 300 + 50 + n$

F $463 = 400 + 60 + n$

G $781 = 700 + 80 + n$

H $640 = 600 + 40 + n$

2. Give the number of each set.



3. Solve the equations.

A $76 = 70 + n$

B $76 = 60 + n$

C $42 = 40 + n$

D $42 = 30 + n$

E $91 = 90 + n$

F $91 = 80 + n$

G $50 = 50 + n$


H $50 = 40 + n$


I $62 = 60 + n$

J $62 = 50 + n$

K $24 = 20 + n$


L $24 = 10 + n$


4. Write each number pair on your paper in the order given. Then put the correct mark ($<$ or $>$) in place of the .

A 65  13


(Answer: 65 $>$ 13)

B 27  95

C 38  48


D 55  56

E 615  605

F 82  92

G 45  54

H 69  70


I 743  733

think

The sum of two numbers is 20. Their difference is 4. What are the numbers?



SUM IS 20
DIFFERENCE IS 4

5. Give the correct mark for each .

A Since $7 + 5 > 10$, we know that $67 + 5$  70.

B Since $5 + 4 < 10$, we know that $15 + 4$  20.

C Since $8 + 6 > 10$, we know that $48 + 6$  50.

D Since $8 + 4 > 10$, we know that $48 + 4$  50.

6. Tell whether each sum is less than 50, more than 50, or equal to 50.

A $46 + 3$

C $46 + 5$

E $47 + 1$

G $47 + 3$

B $46 + 4$

D $46 + 6$

F $47 + 2$

H $47 + 4$

7. Tell whether each sum is less than, more than, or equal to 70.

A $68 + 4$

C $69 + 1$

E $67 + 5$

G $64 + 6$

B $62 + 5$

D $68 + 1$

F $63 + 6$

H $64 + 7$



You are invited to explore

**ACTIVITY
CARD 4**
Page 311

Investigating the Ideas

Can you use the calendar to help you find sums?

- A What is the date 3 days after your birthday?
- B Find the date 8 days after your birthday.

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			



Can you use the calendar to find these sums?

$$\begin{array}{r} 23 \\ + 7 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 24 \\ + 7 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ + 9 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ + 11 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ + 8 \\ \hline \end{array}$$

Discussing the Ideas

1. Study the example below. Explain each step.

Step 1	Step 2	Step 3
$\begin{array}{r} 37 \\ + 25 \\ \hline 12 \end{array}$	$\begin{array}{r} 37 \\ + 25 \\ \hline 12 \\ 50 \end{array}$	$\begin{array}{r} 37 \\ + 25 \\ \hline 12 \\ 50 \\ \hline 62 \end{array}$
$7 + 5 = 12$	$30 + 20 = 50$	$12 + 50 = 62$

2. Now try this one and compare your answer with the answer your teacher puts on the chalkboard.

$$\begin{array}{r} 65 \\ + 17 \\ \hline \end{array}$$

1. Find the sums.

$$\begin{array}{r} \text{A} \quad 46 \\ +28 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 37 \\ +44 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 29 \\ +65 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 67 \\ +15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 48 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 34 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 68 \\ +19 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 17 \\ +35 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 54 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 37 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K} \quad 46 \\ +35 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 27 \\ +67 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M} \quad 58 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N} \quad 42 \\ +49 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O} \quad 36 \\ +27 \\ \hline \end{array}$$

2. Find the sums.

$$\begin{array}{r} \text{A} \quad 76 \\ +40 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 76 \\ +45 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 67 \\ +60 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 67 \\ +66 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 56 \\ +56 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 83 \\ +30 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 83 \\ +39 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 56 \\ +75 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 88 \\ +33 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 95 \\ +28 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K} \quad 76 \\ +72 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 66 \\ +84 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M} \quad 97 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N} \quad 59 \\ +79 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O} \quad 88 \\ +88 \\ \hline \end{array}$$

3. Study the example. Then try to find the other sums without pencil and paper.

Example: $58 + 24$

First

Think

$$\begin{array}{r} 58 \\ +20 \\ \hline 78 \end{array}$$

Then

Think

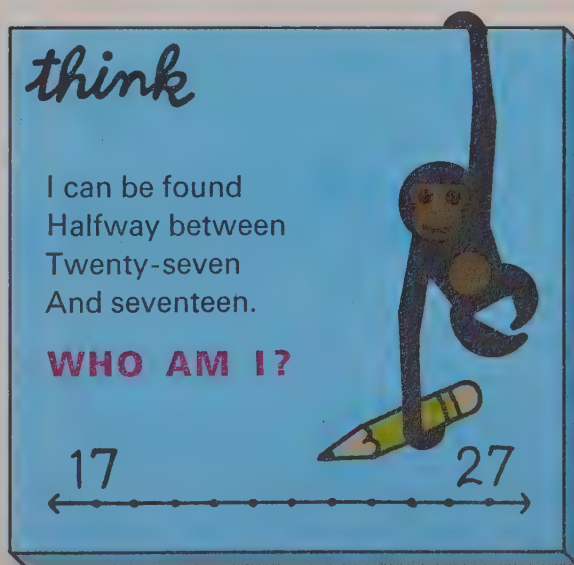
$$\begin{array}{r} 78 \\ +4 \\ \hline 82 \end{array}$$

A $45 + 36$

C $63 + 29$

B $37 + 25$

D $59 + 27$



● Is there a shortcut for adding with regrouping?

Discussing the Ideas

1. Explain the difference in the way John and Susan started their work.

John

$$\begin{array}{r} 37 \\ + 25 \\ \hline 2 \end{array}$$

Susan

$$\begin{array}{r} 37 \\ + 25 \\ \hline 2 \end{array}$$

2. Explain the two steps in this example.

Step 1	Step 2
$\begin{array}{r} 37 \\ + 25 \\ \hline 2 \end{array}$ <p>$7 + 5 = 12$</p>	$\begin{array}{r} 37 \\ + 25 \\ \hline 62 \end{array}$ <p>$10 + 30 + 20 = 60$</p>

3. One of these examples has a mistake. See if you can find it.

A

$$\begin{array}{r} 45 \\ + 38 \\ \hline 83 \end{array}$$

B

$$\begin{array}{r} 34 \\ + 48 \\ \hline 72 \end{array}$$

C

$$\begin{array}{r} 29 \\ + 16 \\ \hline 45 \end{array}$$

4. Explain each step in this example.

Step 1	Step 2	Step 3
<p>Think $7 + 5 = 12$</p> $\begin{array}{r} 357 \\ + 285 \\ \hline 2 \end{array}$ <p>$7 + 5 = 12$</p>	<p>Think $1 + 5 + 8 = 14$</p> $\begin{array}{r} 357 \\ + 285 \\ \hline 42 \end{array}$ <p>$1 + 5 + 8 = 14$ tens</p>	<p>Think $1 + 3 + 2 = 6$</p> $\begin{array}{r} 357 \\ + 285 \\ \hline 642 \end{array}$ <p>$1 + 3 + 2 = 6$</p>

5. Try these two exercises and check your work with your teacher.

A

$$\begin{array}{r} 248 \\ + 175 \\ \hline \end{array}$$

B

$$\begin{array}{r} 657 \\ + 195 \\ \hline \end{array}$$

1. Find the sums.

A	$\begin{array}{r} 57 \\ +15 \\ \hline \end{array}$	B	$\begin{array}{r} 18 \\ +72 \\ \hline \end{array}$	C	$\begin{array}{r} 49 \\ +33 \\ \hline \end{array}$	D	$\begin{array}{r} 28 \\ +77 \\ \hline \end{array}$	E	$\begin{array}{r} 39 \\ +44 \\ \hline \end{array}$	F	$\begin{array}{r} 36 \\ +26 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

G	$\begin{array}{r} 76 \\ +44 \\ \hline \end{array}$	H	$\begin{array}{r} 85 \\ +77 \\ \hline \end{array}$	I	$\begin{array}{r} 98 \\ +33 \\ \hline \end{array}$	J	$\begin{array}{r} 84 \\ +27 \\ \hline \end{array}$	K	$\begin{array}{r} 75 \\ +58 \\ \hline \end{array}$	L	$\begin{array}{r} 83 \\ +75 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

M	$\begin{array}{r} 85 \\ +26 \\ \hline \end{array}$	N	$\begin{array}{r} 73 \\ +98 \\ \hline \end{array}$	O	$\begin{array}{r} 46 \\ +38 \\ \hline \end{array}$	P	$\begin{array}{r} 75 \\ +83 \\ \hline \end{array}$	Q	$\begin{array}{r} 99 \\ +24 \\ \hline \end{array}$	R	$\begin{array}{r} 86 \\ +67 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

2. Find the sums.

A	$\begin{array}{r} 258 \\ +137 \\ \hline \end{array}$	B	$\begin{array}{r} 258 \\ +167 \\ \hline \end{array}$	C	$\begin{array}{r} 258 \\ +187 \\ \hline \end{array}$	D	$\begin{array}{r} 546 \\ +125 \\ \hline \end{array}$	E	$\begin{array}{r} 546 \\ +175 \\ \hline \end{array}$	F	$\begin{array}{r} 546 \\ +675 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

G	$\begin{array}{r} 546 \\ +237 \\ \hline \end{array}$	H	$\begin{array}{r} 546 \\ +287 \\ \hline \end{array}$	I	$\begin{array}{r} 123 \\ +248 \\ \hline \end{array}$	J	$\begin{array}{r} 193 \\ +248 \\ \hline \end{array}$	K	$\begin{array}{r} 648 \\ +176 \\ \hline \end{array}$	L	$\begin{array}{r} 435 \\ +389 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

3. Find the sums.

A	$\begin{array}{r} 804 \\ +307 \\ \hline \end{array}$	B	$\begin{array}{r} 906 \\ +218 \\ \hline \end{array}$	C	$\begin{array}{r} 937 \\ +105 \\ \hline \end{array}$	D	$\begin{array}{r} 893 \\ +248 \\ \hline \end{array}$	E	$\begin{array}{r} 346 \\ +928 \\ \hline \end{array}$	F	$\begin{array}{r} 769 \\ +452 \\ \hline \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

think

My hundreds' place is 9 less than
My tens and ones combined.
Twice my ones will give my tens.
My name you now can find.

WHO AM I?



HUNDREDS

TENS

ONES

Investigating the Ideas



MENU		
Sandwiches	Beverages	Soups
Cheese 35	Milk 17	Chili 40
Ham 40	Milk shake. 35	Vegetable. . 35
Peanut butter. 30	Root beer . 10	Bean 30
Hamburger. . . 40	Orange . . . 10	Desserts
Hot dog 30	Coffee 10	Ice cream. . 25
Tuna 35	Tea 10	Cake 30
Beef 45		Pie 30

Choose a lunch from the menu and find what it costs.

2

You have a dollar to spend for lunch. Can you find a way to spend all of it at the lunch counter?

Discussing the Ideas

How is your "mental" arithmetic? Try to find the cost of these lunches in your head.


- Ham sandwich
- Hamburger
- Peanut butter sandwich
- Bean soup
- Chili
- Vegetable soup
- Milk
- Root beer
- Orange
- Pie
- 2 Hot dogs
- Beef sandwich
- 2 Hamburgers
- Milk
- Chili
- 2 Milks
- Cake
- Ice cream
- Cake
- Milk



1. What costs the most on the menu ?
2. Which soup costs the least ?
3. How much more is cake than ice cream ?
4. For lunch Sue had a hot dog, vegetable soup, and a root beer. How much did her lunch cost ?
5. Cindy bought a hamburger, a milk shake, and a piece of pie. How much did her lunch cost ?
6. How much more is a beef sandwich than a tuna sandwich ?
7. Andy had a sandwich, a soup, and a beverage. He spent the least amount that he could. How much did he spend ?
8. Bill spent 77 cents. What did Bill have to drink ?
- ★ 9. Ann had 95 cents to spend for lunch. She spent more than 85 cents. What might Ann have ordered ?
- ★ 10. Tom did not like soup or dessert. He spent 95 cents for lunch. What might Tom have ordered if he had only one beverage ?
- ★ 11. Jean had one soup, one beverage, and one dessert. She spent 95 cents. What did she have to drink ?

Discussing the Ideas

1. Solve the equations.

A		$35 = 30 + n$
B		$35 = 20 + n$
C		$27 = 20 + n$
D		$27 = 10 + n$
E		$42 = 40 + n$
F		$42 = 30 + n$

2. Find the missing numbers.

A $48 = 40 + n$
 $48 = 30 + n$

D $45 = 40 + n$
 $45 = 30 + n$

G $42 = 40 + n$
 $42 = n + 12$

B $72 = 70 + n$
 $72 = 60 + n$

E $54 = 50 + n$
 $54 = 40 + n$

H $99 = 90 + n$
 $99 = n + 19$

C $65 = 60 + n$
 $65 = 50 + n$

F $61 = 60 + n$
 $61 = 50 + n$

I $68 = n + 8$
 $68 = 50 + n$

1. Study examples A and B.

A To think of 52 as $40 + 12$,

we can write $\begin{array}{r} 4 \quad 12 \\ 52 \end{array}$.

B To think of 37 as $20 + 17$,

we can write $\begin{array}{r} 2 \quad 17 \\ 37 \end{array}$.

Find the matchings. Part C is matched with 4.

C $40 + 13$

D $20 + 14$

E $60 + 12$

F $70 + 11$

G $30 + 18$

H $50 + 16$

1 $\begin{array}{r} 2 \quad 14 \\ 34 \end{array}$

2 $\begin{array}{r} 7 \quad 11 \\ 81 \end{array}$

3 $\begin{array}{r} 5 \quad 16 \\ 66 \end{array}$

4 $\begin{array}{r} 4 \quad 13 \\ 53 \end{array}$

5 $\begin{array}{r} 3 \quad 18 \\ 48 \end{array}$

6 $\begin{array}{r} 6 \quad 12 \\ 72 \end{array}$

2. Complete each of the following as in the examples above.

A To think of 48 as $30 + 18$,
we can write $\begin{array}{r} \end{array}$.

B To think of 65 as $50 + 15$,
we can write $\begin{array}{r} \end{array}$.

C To think of 72 as $60 + 12$,
we can write $\begin{array}{r} \end{array}$.

D To think of 49 as $30 + 19$,
we can write $\begin{array}{r} \end{array}$.

E To think of 83 as $70 + 13$,
we can write $\begin{array}{r} \end{array}$.

F To think of 54 as $40 + 14$,
we can write $\begin{array}{r} \end{array}$.

G To think of 21 as $10 + 11$,
we can write $\begin{array}{r} \end{array}$.

H To think of 96 as $80 + 16$,
we can write $\begin{array}{r} \end{array}$.



Investigating the Ideas

Look for
a pattern.

43	43	43	43	43	43	43
$\begin{array}{r} 43 \\ -1 \\ \hline 42 \end{array}$	$\begin{array}{r} 43 \\ -2 \\ \hline 41 \end{array}$	$\begin{array}{r} 43 \\ -3 \\ \hline 40 \end{array}$	$\begin{array}{r} 43 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ -7 \\ \hline \end{array}$



Can you find the rest of these
differences without subtracting?

75	75	75	75	75	75	75
$\begin{array}{r} 75 \\ -32 \\ \hline 43 \end{array}$	$\begin{array}{r} 75 \\ -33 \\ \hline 42 \end{array}$	$\begin{array}{r} 75 \\ -34 \\ \hline 41 \end{array}$	$\begin{array}{r} 75 \\ -35 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ -36 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ -37 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ -38 \\ \hline \end{array}$

Discussing the Ideas

1. Explain when the number of tens changes in the sets of answers above.
2. Explain each of the steps below.

Step 1	Step 2	Step 3	Step 4
$\begin{array}{r} 64 \\ -26 \\ \hline \end{array}$	$\begin{array}{r} 5 \quad 14 \\ \cancel{6} 4 \\ -26 \\ \hline \end{array}$	$\begin{array}{r} 5 \quad 14 \\ \cancel{6} \cancel{4} \\ -26 \\ \hline 8 \end{array}$	$\begin{array}{r} 5 \quad 14 \\ \cancel{6} \cancel{4} \\ -26 \\ \hline 38 \end{array}$
$4 - 6 = !!!$	$64 = 50 + 14$	$14 - 6 = 8$	$50 - 20 = 30$

3. Find this difference by following the steps above. The answer is 48.

$$\begin{array}{r} 75 \\ -27 \\ \hline \end{array}$$

4. Explain the steps for the first example. Then try the second one on your own.

$\begin{array}{r} 6 \quad 11 \quad 13 \\ \cancel{7} \cancel{2} \cancel{3} \\ -146 \\ \hline 577 \end{array}$	$\begin{array}{r} 642 \\ -256 \\ \hline \end{array}$
--	--

1. Cover the answers and work the problems.

$$\begin{array}{r} \text{A} \quad 74 \\ -26 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \text{B} \quad 52 \\ -35 \\ \hline 17 \end{array}$$

$$\begin{array}{r} \text{C} \quad 92 \\ -64 \\ \hline 28 \end{array}$$

$$\begin{array}{r} \text{D} \quad 83 \\ -27 \\ \hline 56 \end{array}$$

$$\begin{array}{r} \text{E} \quad 61 \\ -25 \\ \hline 36 \end{array}$$

2. Check each answer in exercise 1 by addition.

3. Find the differences.

$$\begin{array}{r} \text{A} \quad 43 \\ -16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 33 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 72 \\ -44 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 54 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 81 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 68 \\ -25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 42 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 95 \\ -77 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 76 \\ -38 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 69 \\ -62 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K} \quad 20 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 27 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M} \quad 42 \\ -38 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N} \quad 50 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O} \quad 68 \\ -29 \\ \hline \end{array}$$

$$\begin{array}{r} \text{P} \quad 156 \\ -82 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Q} \quad 143 \\ -71 \\ \hline \end{array}$$

$$\begin{array}{r} \text{R} \quad 143 \\ -74 \\ \hline \end{array}$$

$$\begin{array}{r} \text{S} \quad 120 \\ -68 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T} \quad 165 \\ -76 \\ \hline \end{array}$$

$$\begin{array}{r} \text{U} \quad 142 \\ -65 \\ \hline \end{array}$$

$$\begin{array}{r} \text{V} \quad 122 \\ -47 \\ \hline \end{array}$$

$$\begin{array}{r} \text{W} \quad 130 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} \text{X} \quad 115 \\ -88 \\ \hline \end{array}$$

★ 4. Find the differences.

$$\begin{array}{r} \text{A} \quad 124 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 224 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 132 \\ -95 \\ \hline \end{array}$$

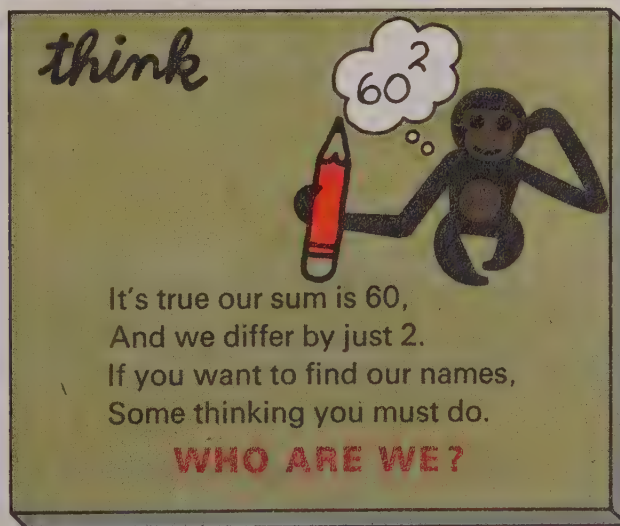
$$\begin{array}{r} \text{D} \quad 432 \\ -95 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 143 \\ -68 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 543 \\ -168 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 724 \\ -157 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 631 \\ -256 \\ \hline \end{array}$$



Investigating the Ideas



How close can you come to guessing someone's weight?

Name	Guess	Weight	Difference
Ann	23	26	?
Fred	30	24	?

?

Can you guess the weight of each classmate in your group?

Make a chart like the one above to record your findings.

Discussing the Ideas

- A** Did you guess anyone's weight exactly?

B Whose weight did you come closest to guessing?

C How many times did you guess "over"?

D How many times did you guess "under"?
- A** Did you use what you know about **your** size and weight to help you make your guesses? How?

B How could you make better guesses?
- A** A man 173 centimetres tall might weigh about 70 kilograms.

A Can you find two students who together weigh this much?

B Can you find three students who together weigh this much?
- A** What is your guess for the total weight of your class?

B Did you miss the total weight by more than 500 kilograms?

1. Which child weighs most ?

2. Who weighs least ?

3. How many children weigh less than 25 kilograms ?

4. How many children weigh more than 30 kilograms ?

5. The table shows the guess and the measured weight for each student. Find how close the guess was for each student.

Name	Guess	Weight	Difference
Bobby	30	24	?
Susan	28	27	?
Tom	25	28	?
Sara	21	19	?
Alan	22	25	?
Bill	29	29	?
Jane	24	21	?
Tony	23	22	?
Joan	27	26	?
Ann	26	22	?
Rick	31	30	?

6. The boys' names are in red boxes. How much heavier is the heaviest boy than the lightest boy ?

7. How much do these children weigh together ?

A Bobby and Alan

C Rick and Tony

E Sara and Ann

B Susan and Sara

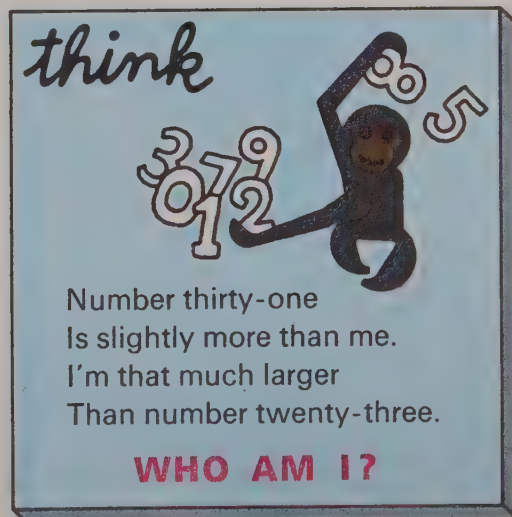
D Ann and Joan

F Bill and Alan

8. How much heavier is the heaviest girl than the lightest girl ?

★ 9. Two children got on the scales together. The scales showed 58. Who were the children ?

★ 10. How much greater is the total weight of the boys than the total weight of the girls ?



High and Low Temperatures

Miss Smith's class decided to keep a record of high and low temperatures for days in November.

For each day, the students wrote the two temperatures on the school calendar.

NOVEMBER						
S	M	T	W	T	F	S
		1	2	3	4	5
		17 8	16 8	11 4	9 3	9 2
6	7	8	9	10	11	12
8 1	9 0	11 4	10 1	9 1	8 1	7 1
13	14	15	16	17	18	19
3 0	10 0	18 3	17 3	15 2	9 1	
20	21	22	23	24		
7 5	2 0	3 1	3 1	4 0		
27	28	29	30			
1 0	8 1	9 8	11 3			



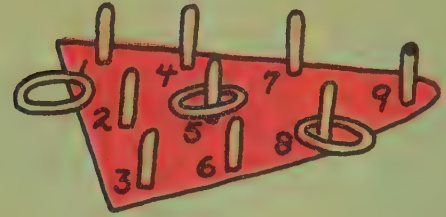
Use the calendar above for these problems.

- A** Which Monday had the highest temperature ?

B Which Monday had the lowest temperature ?
- Water freezes at temperatures of 0 or lower. How many days are shown with freezing temperatures ?
- Which Sundays had freezing temperatures ?
- How many days are shown with temperatures above 16 ?
- What was the difference between the high and the low temperature on each of these days ?

A November 2	C November 1
B November 27	D November 8
- How much more was the high temperature on November 14 than the high temperature on November 6 ?
- What day was the warmest day of the month ? What was the difference between the highest and the lowest temperatures in November ?

FIGURING SCORES



The numbers given in the chart are the children's scores for each game. For example, Dan scored 47 points in game 3.



1. How many points did Fay score in games 2 and 3 together?
2. How many more points did Bill score in game 4 than in game 3?
3. In game 6, how much more was the highest score than the lowest score?
4. In game 2, how many points did Carol and Dan score together?
5. In game 5, how much less was Ed's score than Dan's?
6. Fay found the sum of her two best scores. Was this more or less than the sum of Ed's two best scores?

	Ann	Bill	Carol	Dan	Ed	Fay
Game 1	28	27	62	81	60	47
Game 2	34	26	58	27	54	23
Game 3	39	43	72	47	34	52
Game 4	50	76	40	56	67	58
Game 5	63	18	43	64	29	67
Game 6	31	71	42	54	34	36

7. In game 1, the sum of the two highest scores was 143. In what other game was the sum of the two highest scores 143?
8. What is the difference of the highest score on the chart and the lowest score?
- ★ 9. The children decided that the winner should be the one who had the highest sum for his best 3 games. Who won?

Investigating the Ideas

Find the prices of some things you would like to buy for less than one dollar.

Item and Cost		quarters	dimes	nickels	pennies
Pen	69 ¢				
		2	1	1	4
Game	98 ¢				
		3	2	0	3



Can you fill in a table like this by giving the **fewest** coins you could use to buy each one?

Discussing the Ideas

1. Give some other ways you could pay for the pen.
2. What are some other ways you could pay for the game?
3. What change would you get back from one dollar for each item above?
4. Give some different ways you could give someone change for a dollar.
5. How much money would you have if you had two of each coin listed in the chart?



1. Give the value of each coin collection.



2. For each part, tell which coin collection has the greater value.

A B or C	B A or B	C A or D	D C or D
----------	----------	----------	----------
3. Give the value of each of the two coin collections together.

A A and B	C A and C	E A and D
B B and D	D B and C	F C and D
4.

A How much more is A than B?	D How much more is B than C?
B How much more is A than C?	E How much more is A than D?
C How much more is C than D?	F How much more is B than D?
5. Which pair of collections has the greater value?

A A and B or C and D	★ 6. A Give the total value of all the coin collections together.
B A and C or B and D	B How much more would you need to have 5 dollars?
C A and B or A and C	

● Can you add and subtract amounts of money?

Investigating the Ideas

Choose two things you can buy at a total cost of less than 3 dollars.



Can you fill in a chart like the one below?

Had	Bought	Bought	Spent in all	Had left
\$3.00	Record \$.95	Game \$1.50	\$2.45	\$.55

Discussing the Ideas

1. Give the missing numbers.

Example: \$5.28 means 5 dollars and 28 cents.

- A \$7.16 means dollars and 16 cents.
 B \$4.75 means 4 dollars and cents.
 C \$2.09 means dollars and 9 cents.
 D \$17.34 means dollars and cents.

2. Give the missing numbers.

Example: \$4.38 is 438 cents (438¢).

- A \$6.52 is ¢. C \$1.00 is ¢. E \$.50 is ¢.
 B \$1.27 is ¢. D \$.76 is ¢. F \$2.86 is ¢.

3. Give the number of dollars and cents for each exercise.

Example: 364¢ is \$3.64

- A 125¢ C 506¢ E 650¢ G 1000¢ I 1250¢
 B 326¢ D 400¢ F 100¢ H 1100¢ J 1795¢

Using the Ideas

1. Find the total amounts.

Example:

\$5.68

2.71

\$8.39

A \$3.27

4.61

B \$5.38

1.25

C \$7.64

1.75

D \$2.76

1.85

E \$3.79

4.48

F \$9.72

8.99

2. Find the total amounts.

Examples:

\$1.23 and \$2.45 is **\$3.68**

\$2.45 and \$3.72 is **\$6.17**

A \$2.14 and \$1.53 is **||||**.

B \$5.21 and \$2.37 is **||||**.

C \$3.50 and \$3.50 is **||||**.

3. Find the difference in the amounts.

Example:

\$5.27

1.43

\$3.84

A \$6.34

1.52

B \$7.65

2.24

C \$8.32

4.18

D \$9.21

1.65

E \$12.72

5.28

F \$10.64

3.95

Solving Story Problems

1. Debra had this much money.

She bought a book for 99 cents and paid 5 cents tax.

A How much did she have at the start?

B How much did she spend? C How much did she have left?



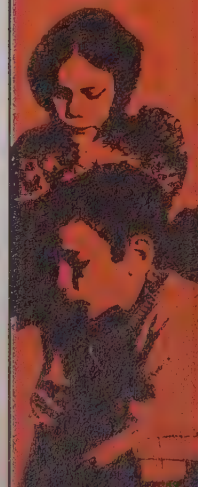
2. Craig had this much money.

He bought some goldfish for \$1.39.

His tax was 7 cents.

A How much did he have at the start?

B How much did he spend? C How much did he have left?



How sharp are your adding and subtracting skills?

1. Find the sums and differences.

$$\begin{array}{r} \text{A} \quad 24 \\ +15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 35 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 56 \\ +22 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 78 \\ -53 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 92 \\ -42 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 64 \\ +23 \\ \hline \end{array}$$

2. Find the sums.

$$\begin{array}{r} \text{A} \quad 75 \\ +16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 38 \\ +25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 67 \\ +17 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 67 \\ +57 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 84 \\ +92 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 84 \\ +98 \\ \hline \end{array}$$

3. Find the differences.

$$\begin{array}{r} \text{A} \quad 52 \\ -16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 52 \\ -36 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 73 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 73 \\ -38 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 126 \\ -53 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 126 \\ -59 \\ \hline \end{array}$$

4. Find the sums and differences.

$$\begin{array}{r} \text{A} \quad 75 \\ +83 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 67 \\ +54 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 56 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 70 \\ -26 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 78 \\ +65 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 156 \\ -88 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 132 \\ -54 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 324 \\ +247 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 384 \\ +247 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 432 \\ -154 \\ \hline \end{array}$$

5. Find the sums.

$$\begin{array}{r} \text{A} \quad 21 \\ 25 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 34 \\ 23 \\ +18 \\ \hline \end{array}$$


★ 6. Find the differences.

$$\begin{array}{r} \text{A} \quad 602 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 500 \\ -34 \\ \hline \end{array}$$

think

2 + 8 = 10
1 + 9 = 10
10 + 10 = 20



Find each sum quickly without pencil and paper.

1. 1 + 5 + 9
2. 1 + 2 + 5 + 8 + 9
3. 1 + 2 + 3 + 5 + 7 + 8 + 9
4. 1 + 50 + 99
5. 1 + 2 + 50 + 98 + 99
6. 1 + 2 + 3 + 50 + 97 + 98 + 99

Solving Short Story Problems

- 1** 45 cents for a sandwich.
15 cents for milk.
How much for both?



- 2** Had a dollar.
Spent 49 cents.
How much left?

- 3** Weighed 58 kilograms.
Gained 14 kilograms.
Weigh how much now?

- 4** 52 marbles.
17 are taken away.
How many are left?

- 5** 43 cookies.
28 ice cream bars.
How many more cookies than ice cream bars?

- 6** 84 cents for a game. 56 cents for a puzzle.
How much less for the puzzle than for the game?



- 7** 14 apples in a sack.
More are put in.
32 apples in the sack now.
How many were put in?

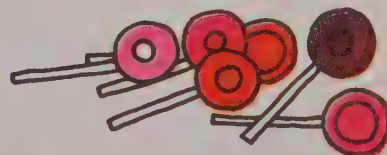
- 8** Lunch period: 45 minutes.
Recess: 25 minutes.
How much longer for lunch?

- 9** Room A: 32 children.
Room B: 27 children.
How many more in Room A than in B? How many less in Room B than in A?



- 10** 65 cars. 19 are black. How many are not black?

- 11** 60 eggs.
One dozen are broken.
How many are not broken?



- 12** 45 doughnuts.
27 of them are eaten.
How many are left?

- ★ **13** 25 children.
34 lollipops.
Each child gets at least one lollipop. How many children can have two?

Reviewing the Ideas

1. Find the sums and the differences.

$$\begin{array}{r} \text{A} \quad 23 \\ + 51 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 78 \\ - 24 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 56 \\ + 13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 60 \\ + 16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 57 \\ - 36 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 82 \\ - 32 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 27 \\ + 54 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 62 \\ - 24 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 48 \\ + 36 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 75 \\ + 15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K} \quad 43 \\ - 15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 51 \\ - 27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M} \quad 67 \\ + 27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N} \quad 86 \\ - 67 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O} \quad 70 \\ - 26 \\ \hline \end{array}$$

$$\begin{array}{r} \text{P} \quad 38 \\ + 57 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Q} \quad 39 \\ + 48 \\ \hline \end{array}$$

$$\begin{array}{r} \text{R} \quad 81 \\ - 44 \\ \hline \end{array}$$

2. Find the sums.

$$\begin{array}{r} \text{A} \quad 23 \\ 16 \\ + 50 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 31 \\ 26 \\ + 12 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 42 \\ 14 \\ + 25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 30 \\ 50 \\ + 20 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 32 \\ 57 \\ + 26 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 38 \\ 24 \\ + 10 \\ \hline \end{array}$$

3. Find the sums and differences.

$$\begin{array}{r} \text{A} \quad 78 \\ + 49 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 120 \\ - 57 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 95 \\ + 36 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 137 \\ - 68 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 87 \\ + 76 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 153 \\ - 75 \\ \hline \end{array}$$

4. Find the differences.

$$\begin{array}{r} \text{A} \quad 326 \\ - 114 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 9782 \\ - 1542 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 3641 \\ - 1216 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 4372 \\ - 144 \\ \hline \end{array}$$

★ 5. Find the differences.

$$\begin{array}{r} \text{A} \quad 1682 \\ - 427 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 8002 \\ - 643 \\ \hline \end{array}$$

think

Diane has 48 cents.





















1. What coins does she have if she has 9 coins?
2. What is the fewest number of coins she could have?
3. What is the fewest number of coins she could have and still have at least one of each coin pictured?

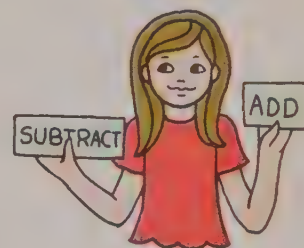


6. Find the amounts.

A	\$1.25	B	\$3.84	C	\$1.84	D	\$6.40	E	\$7.04	F	\$5.00
	<u>+2.41</u>		<u>-1.22</u>		<u>+2.09</u>		<u>-1.25</u>		<u>+1.88</u>		<u>-4.98</u>

7. In these exercises, no numbers are given. You should decide whether you would add or subtract if numbers were given. Answer **A** if you would **add** to answer the question. Answer **S** if you would **subtract**. Think carefully before giving your answer.

- A Joe had  marbles. He gave  to Tom.
How many did he have left?
- B Jane counted  cars on one train and  cars on another. How many did she count in all?
- C Sue had  cents. She spent  cents for an apple.
How much did she have left?
- D Tom is  years old, and Jim is . How much younger is Jim than Tom?
- E Susan spent  cents for a sandwich and  cents for milk.
How much did she spend?
- F In Jane's class there are  children. There are  boys in the class. How many girls are in Jane's class?
- G Tim checked  books out of the library. Later he returned  of the books. How many did he still have?
- H Beth and Sara have  dolls in all.  of the dolls are Sara's.
How many of the dolls are Beth's?
- I Jack read  pages in his book. He has  pages yet to read. How many pages are in the book?
- J Ann said, "  years ago, I was  years old." How old is Ann now?



1. Four of these statements are false. Which ones are they?

A $15 - 5 = 5$

D $39\,427 > 38\,998$

G $67 + 8 = 70 + 5$

B $26 + 7 > 30$

E $48 - 9 < 40$

H $48\,265 = 48\,165 + 1000$

C $34 - 8 > 30$

F $48 - 19 > 30$

I $528 = 500 + 20 + 8$

2. Write the correct numeral for each |||| .

A For 6 tens and 2,
we write |||| .

C For 2 tens and 5,
we write |||| .

E For 7 tens and 0,
we write |||| .

B For 8 tens and 7,
we write |||| .

D For 5 tens and 2,
we write |||| .

F For 1 ten and 0,
we write |||| .

3. Solve the equations.

A $6 + 5 = n$

G $n + 6 = 8$

M $14 - 5 = n$

S $n + 6 = 8$

B $4 + 3 = n$

H $n + 4 = 11$

N $9 - 6 = n$

T $4 + n = 9$

C $8 + 7 = n$

I $n + 9 = 10$

O $12 - 5 = n$

U $6 + 8 = n$

D $9 + 2 = n$

J $n + 8 = 12$

P $11 - 4 = n$

V $n - 2 = 4$

E $6 + 4 = n$

K $n + 6 = 6$

Q $15 - 7 = n$

W $9 - n = 4$

F $8 + 8 = n$

L $n + 5 = 10$

R $18 - 9 = n$

X $15 - 5 = n$

4. Copy each column and complete the counting.

A

6
7
8

B

16
17
18
22

C

86
87
88
89

D

96
97
98

E

436
437
438
439

5. Solve each equation.

A $9 + 1 = n$ B $99 + 1 = n$ C $999 + 1 = n$ D $9999 + 1 = n$

6. Give the correct sign $<$ or $>$ for each .

A $26 \text{ } \text{ } 28$

B $94 \text{ } \text{ } 90$

C $87 \text{ } \text{ } 77$

D $59 \text{ } \text{ } 99$

E $127 \text{ } \text{ } 147$

F $152 \text{ } \text{ } 122$

G $219 \text{ } \text{ } 209$

H $257 \text{ } \text{ } 277$

I $238 \text{ } \text{ } 228$

J $654 \text{ } \text{ } 664$

K $275 \text{ } \text{ } 272$

L $542 \text{ } \text{ } 546$

M $556 \text{ } \text{ } 561$

N $474 \text{ } \text{ } 439$

O $621 \text{ } \text{ } 612$

P $389 \text{ } \text{ } 398$

Q $672 \text{ } \text{ } 658$

R $180 \text{ } \text{ } 159$

S $338 \text{ } \text{ } 242$

T $665 \text{ } \text{ } 571$

U $862 \text{ } \text{ } 955$

V $347 \text{ } \text{ } 274$

W $631 \text{ } \text{ } 713$

X $865 \text{ } \text{ } 568$

7. Copy the problems and give the missing digits.

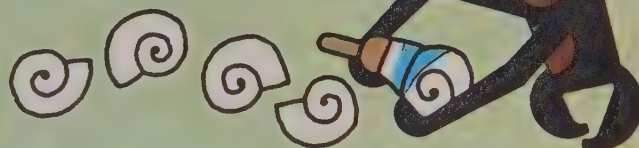
A $\begin{array}{r} 1 \text{ } \text{ } \\ -6 \text{ } \text{ } \\ \hline 11 \end{array}$ B $\begin{array}{r} 26 \\ + \text{ } \text{ } \\ \hline 34 \end{array}$

C $\begin{array}{r} \text{ } 6 \\ +19 \text{ } \text{ } \\ \hline 4 \text{ } \text{ } \end{array}$ D $\begin{array}{r} 6 \text{ } \text{ } \\ + \text{ } 7 \\ \hline 91 \end{array}$

E $\begin{array}{r} 72 \\ -3 \text{ } \text{ } \\ \hline \text{ } 8 \end{array}$ F $\begin{array}{r} \text{ } \text{ } \\ -47 \\ \hline 16 \end{array}$

G $\begin{array}{r} 43 \text{ } \text{ } \\ +2 \text{ } 3 \\ \hline \text{ } 98 \end{array}$ H $\begin{array}{r} 48 \text{ } \text{ } \\ + \text{ } 54 \\ \hline 9 \text{ } 3 \end{array}$

think



Nan picked out 5 white shells. She put some blue paint on 3 of them. Then she could see white on only 3 of the 5 shells. On how many could she see both blue and white?



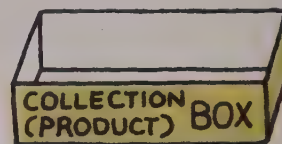
You are invited to explore

ACTIVITY
CARD 5
Page 311

● What is multiplication?

Investigating the Ideas

Get some paper cups, counters, and a collection box.



Number of cups	Number in each cup	Total number in product box	Multiplication equation
5	4	20	$5 \times 4 = 20$

?

Can you use different numbers of cups and counters and write 4 more multiplication equations?

Discussing the Ideas

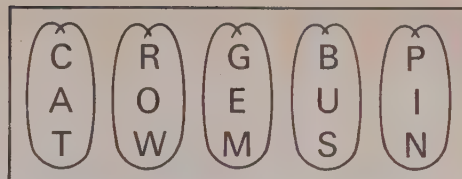
1. Give the missing numbers and explain how to write a multiplication equation.

	We see	We think	We write
A	<p>3 boxes</p> <p>5 crayons in each box</p>		<p>⇒ ?</p>
B	<p>2 sets of keys</p> <p>4 keys in each set</p>		<p>⇒ ?</p>

2. Make up an example like those above.

Using the Ideas

1. **A** How many words?
- B** How many letters in each word?
- C** How many letters in all?
- D** Solve: $5 \times 3 = n$



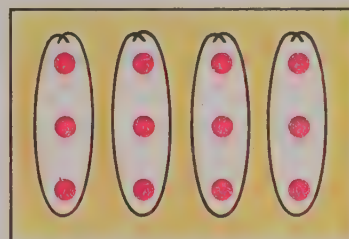
2. **A** How many pairs of shoes?
- B** How many in each pair?
- C** How many shoes in all?
- D** Solve: $4 \times 2 = n$



3. **A** How many ants?
- B** How many legs on each ant?
- C** How many legs in all?
- D** Solve: $3 \times 6 = n$



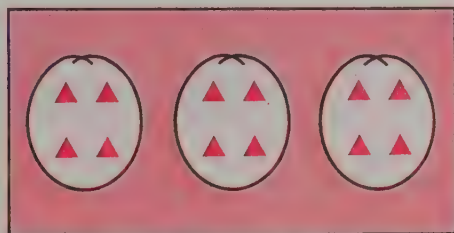
4. **A** How many sets?
- B** How many dots in each set?
- C** How many dots in all?
- D** Solve: $4 \times 3 = n$



5. **A** How many nickels?
- B** How many cents for each nickel?
- C** How many cents in all?
- D** Solve: $5 \times 5 = n$



6. Solve the equation.



$$3 \times 4 = n$$

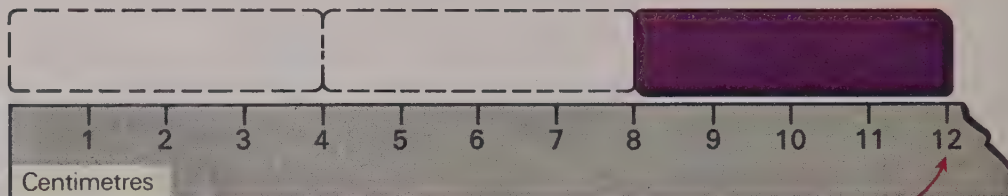
7. Write a multiplication equation.



● Can the number line help you think about multiplication?

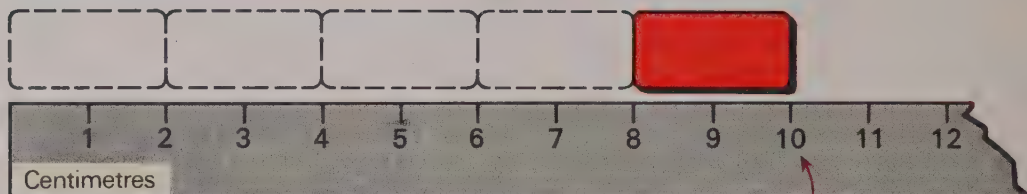
Investigating the Ideas

You can use your strips and a centimetre ruler to help you think about multiplication.



Put down the 4-strip 3 times.

$$3 \times 4 = \underline{\quad ? \quad}$$



Put down the 2-strip 5 times.

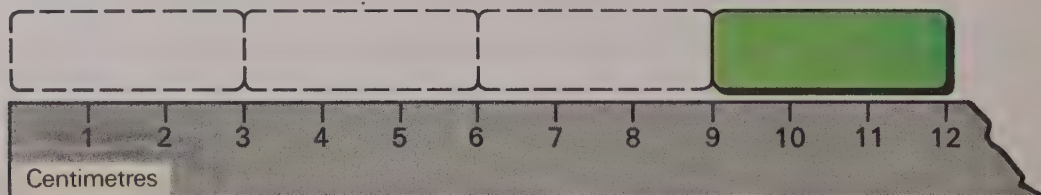
$$5 \times 2 = \underline{\quad ? \quad}$$



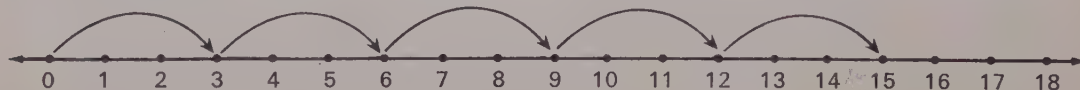
Can you use your strips and a ruler and write at least six more multiplication equations?

Discussing the Ideas

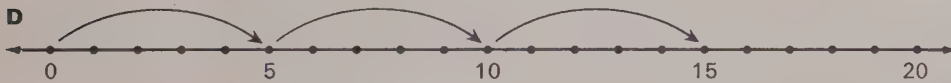
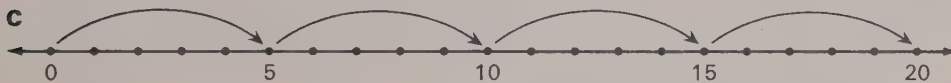
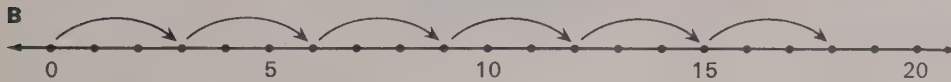
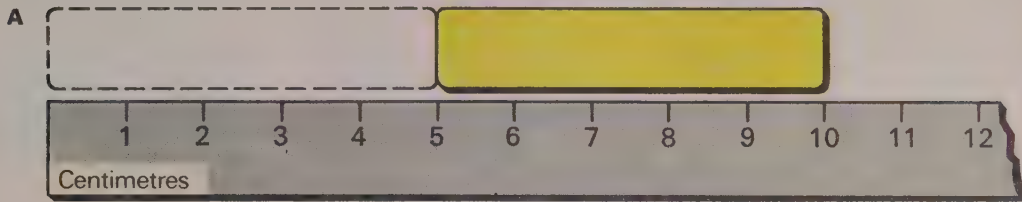
1. What multiplication equation does the picture suggest?



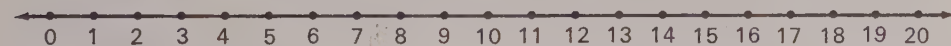
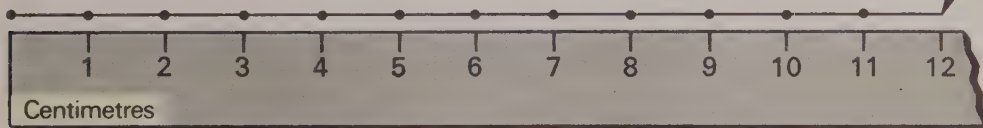
2. What multiplication fact does the number line show?



1. Write a multiplication equation for each picture.



2. You can use your centimetre ruler to draw number lines.



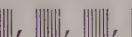
Draw 3 number lines. Use them to show these multiplications.


A 2×7

B 4×3

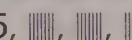
C 4×4

★ 3. Find the missing numbers.

A 2, 4, 6, , 16

B 3, 6, 9, , 24

C 4, 8, 12, , 32

D 5, 10, 15, , 40

E 6, 12, 18, , 48

F 7, 14, 21, , 56

G 8, 16, 24, , 64

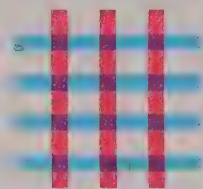
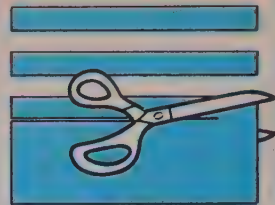
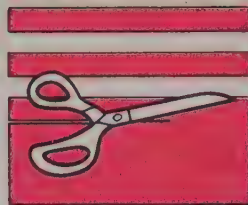
H 9, 18, 27, , 72

● *Let's think about multiplication in another way.*

Investigating the Ideas

Cut five thin red strips and five thin blue strips.

Now make a table like the one below.



Number of red strips	Number of blue strips	Number of crosses	Multiplication equation
3	4	12	$3 \times 4 = 12$
5	3	?	$5 \times 3 = ?$

?

Can you use your strips to help you write other multiplication equations?

Discussing the Ideas

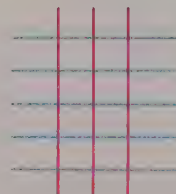
1. Show how you would use your strips to solve this equation.

$$4 \times 2 = n$$

2. What equation can you solve by laying the strips down like this? Show how to do this.



3. You could draw lines instead of using your strips. What equation can you solve by counting crosses on these lines?

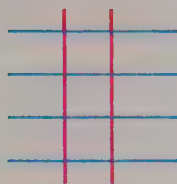


4. What are the largest numbers you could multiply using your strips?

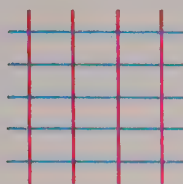
Using the Ideas

1. Write and solve a multiplication equation for each picture.

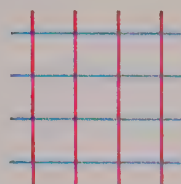
A



B

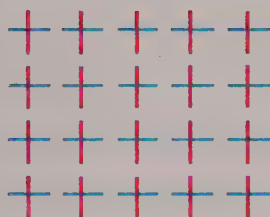


C



Parts of the lines have been erased in exercises D, E, and F, but you can still see the crosses.

D



E



F



Only the dots where the lines cross are left in exercises G, H, and I, but you can still tell how many lines and how many crosses.

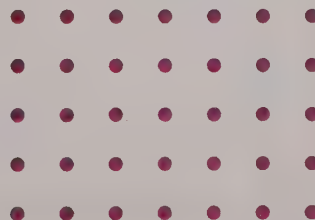
G



H



I

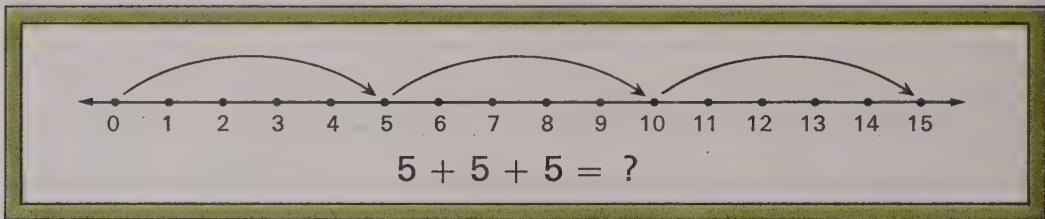
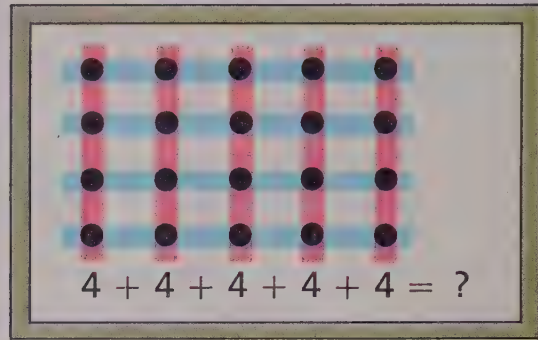
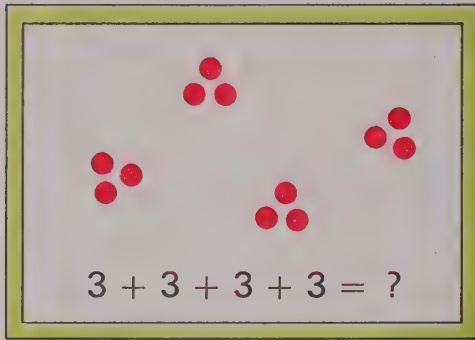


2. Use strips, lines, or dots and solve these equations.

A $2 \times 6 = ?$ B $4 \times 5 = ?$ C $3 \times 7 = ?$ D $8 \times 3 = ?$

Investigating the Ideas

Find the sum for each picture.



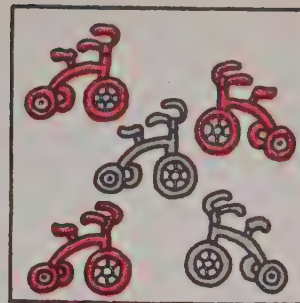
Can you write a multiplication equation for each picture?

Discussing the Ideas

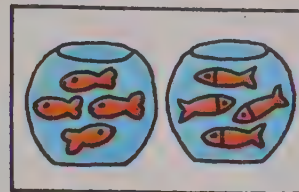
1. Carol said, "Multiplication is just a short way to do addition." What do you think she meant?
2. **A** Can you make up an example using sets to show $6 + 6 + 6$? What multiplication equation goes with this?
B Can you make up an example using dots to show $4 + 4$? What multiplication equation goes with this?
C Can you make up an example using the number line to show $3 + 3 + 3 + 3 + 3$? What multiplication equation goes with this?

Using the Ideas

1. **A** How many tricycles?
- B** How many wheels on each tricycle?
- C** How many wheels in all?
- D** Write an addition equation about the sets.
- E** Write a multiplication equation about the sets.



2. **A** How many bowls?
- B** How many fish in each bowl?
- C** How many fish in all?
- D** Write one addition and one multiplication equation about the sets.



3. Solve the equations.

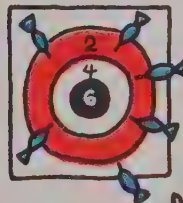
A $4 + 4 + 4 = n$
 $3 \times 4 = n$

C $3 + 3 + 3 + 3 + 3 = n$
 $5 \times 3 = n$

B $6 + 6 + 6 = n$
 $3 \times 6 = n$

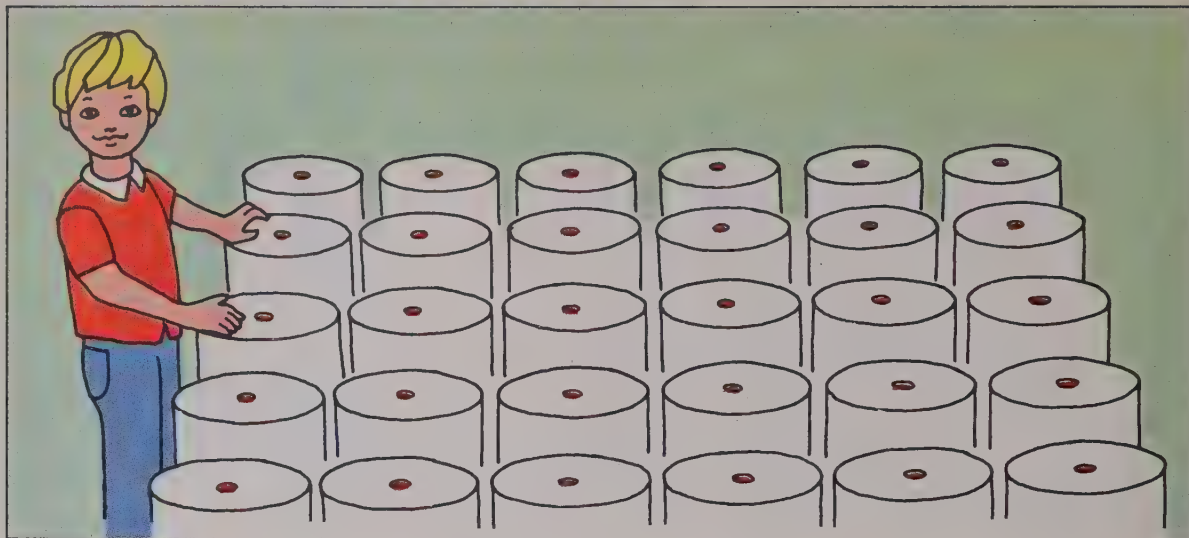
D $2 + 2 + 2 + 2 = n$
 $4 \times 2 = n$

4. **A** Ken made a dart board.
 The first time he threw 6 darts,
 the board looked like this.
 Nancy was scorekeeper. She wrote
 $2 + 2 + 2 + 2 + 2 = 10$.
 Ken found his score by multiplication.
 Give the multiplication problem Ken worked.



- B** In one game Bob threw all 6 darts in the 4 ring.
 What was his score?
- ★ **C** Jane threw 3 darts. Her score was 14. Where did the darts land?
- ★ **D** John threw 3 darts. His score was 12. Where could his darts have landed?

NEWFOUNDLAND



Newfoundland is well known for its fishing. It also has a large pulp and paper industry.

1. Bowater's mills at Cornerbrook make newsprint. It is stored and shipped in large rolls. In the diagram above, how many rolls are in each row? How many rows are there? How many rolls of newsprint in all?
2. In the diagram above, how many rolls are in each column? How many columns are there? How many rolls of newsprint in all?
3. Newfoundland became Canada's tenth province in 1949. Before then it was a British colony and had its own coins. Jim has 4 rolls of George VI Newfoundland pennies. There are 5 pennies in each roll. How many of these pennies does Jim have?
4. Paul, John and Eddie went fishing. They each caught 5 fish. How many fish did the boys catch?
5. Jim had 3 rows of Edward VII nickels with 6 in each row. How many Edward VII nickels did he have?
- ★6. Suppose a certain penny is worth 5 cents and an older penny is worth 10 cents. Which is worth more, five of the pennies worth 5 cents or three of the pennies worth 10 cents?

Centennial Coins



To mark Canada's one hundredth birthday in 1967, the Canadian mint issued a special series of coins.

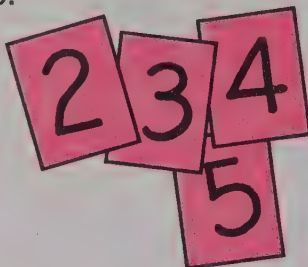
1. A set of 6 Centennial coins includes a penny, a nickel, a dime, a quarter, a fifty-cent piece and a dollar. Bob has 4 sets. How many coins does Bob have ?
2. Gerry has a page that will hold pennies in slots. The page has 5 rows and 5 columns. How many pennies does Gerry have if the page is full ?
3. Bill put 10 dimes in a roll. How many cents is the roll worth ?
4. Bill put 4 rolls in a box. How many dimes did Bill put in the box ?
5. Ted had 6 rows of Centennial nickels with 3 nickels in each row. How many Centennial nickels did he have ?
- ★6. 58 884 849 Centennial nickels were made in 1967.
9 028 507 Sudbury nickels were made in 1951 to mark the 200th anniversary of the discovery of nickel in Canada. Which of these nickels would you be most likely to find ?
- ★7. Nancy has a page with slots to hold Centennial dimes. It has spaces for 7 rows with 4 dimes in each row. There are only 7 empty spaces. How many dimes are already on the page ?

Investigating the Ideas

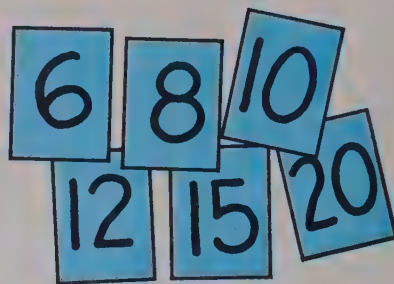
Make cards like these.



Symbol cards



Factor cards



Product cards

Here is one multiplication equation you can make with your cards.

$$2 \times 3 = 6$$



How many more multiplication equations can you make?

Record each one.

Discussing the Ideas

The numbers we multiply are called **factors** of the product.
The answer in multiplication is called the **product** of the factors.

A $\begin{array}{c} 4 \\ \uparrow \\ \text{factor} \end{array} \times \begin{array}{c} 3 \\ \uparrow \\ \text{factor} \end{array} = \begin{array}{c} 12 \\ \uparrow \\ \text{product} \end{array}$

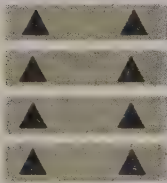
B $\begin{array}{r} 7 \leftarrow \text{factor} \\ \times 4 \leftarrow \text{factor} \\ \hline 28 \leftarrow \text{product} \end{array}$

1. Suppose the product is 24. One factor is 6. The other factor is 4. How would you write this as in A? as in B?
2. How are factors and products like addends and sums?

1. **A** In $3 \times 5 = 15$, the number 15 is the product of what factors?
B In $4 \times 3 = 12$, what is the number 12 called?
C In $6 \times 7 = 42$, the number 42 is the product of what factors?
D In $8 \times 9 = 72$, what is the number 72 called?
E In $3 \times 5 = 15$, the numbers 3 and 5 are factors of what product?
F In $4 \times 3 = 12$, what are the numbers 4 and 3 called?

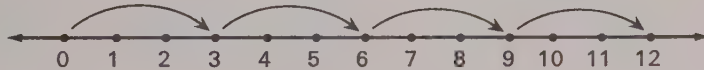
2. Write a multiplication equation for each exercise. Write an **f** over each factor and a **p** over the product as in the example: $\overset{\text{f}}{3} \times \overset{\text{f}}{4} = \overset{\text{p}}{12}$

A



B $4 + 4 + 4 + 4 + 4 = 20$

C



3. What is the product when

A 2 and 3 are the factors?

B 3 and 4 are the factors?

C 2 and 7 are the factors?

D 9 and 2 are the factors?

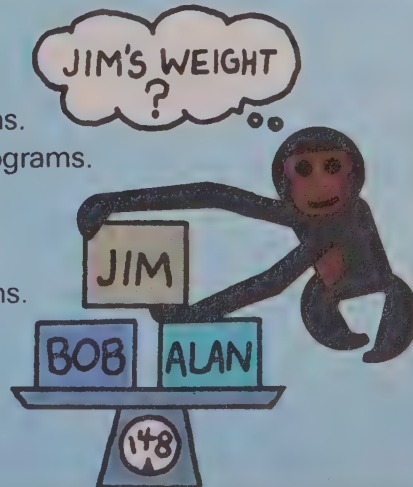
E 3 and 7 are the factors?

F 6 and 4 are the factors?





think





Alan and Bob together weigh 41 kilograms.
 Alan, Bob and Jim together weigh 67 kilograms.



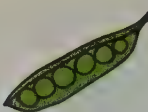

1. How much does Jim weigh?
 Alan and Jim together weigh 48 kilograms.
2. How much does Alan weigh?
3. How much does Bob weigh?







Short Picture Problems

1. **IF** 1  4  **THEN** 3  ? 

2. **IF** each  3  **THEN** 5  ? 

3. **IF** each  6  **THEN** 3  ? 

4. **IF** 1  4  **THEN** 5  ? 

Short Stories

1 3 engines on each jet.
5 jets.
How many engines?

2 4 chairs in each row.
3 rows.
How many chairs?



3 5 puppies.
4 legs per puppy.
How many legs?



4 6 legs on an insect.
3 insects.
How many legs?

5 8 legs on a spider.
2 spiders.
How many legs?



1. For each pair, write the larger number on your paper.

A 3764; 4764

B 67 289; 67 290

2. A What is the area of the rectangle?

B What is the area of $\frac{1}{2}$ of the rectangle?

C What is the area of $\frac{1}{4}$ of it?



3. Solve the equations.

A $295 = 200 + n + 5$

B $6285 = 6000 + n + 80 + 5$

4. Write 2 addition and 2 subtraction equations for each exercise.



5. Solve the equations.

A $6 + 7 = n$

B $7 + 6 = n$

C $8 + 4 = n$

D $4 + 8 = n$

6. Solve the equations.

A $(4 + 3) + 6 = n$

C $(5 + 2) + 4 = n$

B $4 + (3 + 6) = n$

D $5 + (2 + 4) = n$

7. Find the sums and differences.

A $\begin{array}{r} 34 \\ +27 \\ \hline \end{array}$

B $\begin{array}{r} 45 \\ +38 \\ \hline \end{array}$

C $\begin{array}{r} 74 \\ -26 \\ \hline \end{array}$

D $\begin{array}{r} 93 \\ -47 \\ \hline \end{array}$

E $\begin{array}{r} 26 \\ +49 \\ \hline \end{array}$

F $\begin{array}{r} 32 \\ -18 \\ \hline \end{array}$

G $\begin{array}{r} 85 \\ +69 \\ \hline \end{array}$

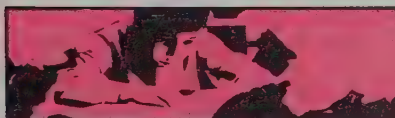
H $\begin{array}{r} 123 \\ -64 \\ \hline \end{array}$

I $\begin{array}{r} 48 \\ +75 \\ \hline \end{array}$

J $\begin{array}{r} 97 \\ -69 \\ \hline \end{array}$

K $\begin{array}{r} 84 \\ +66 \\ \hline \end{array}$

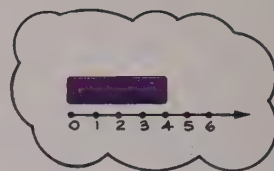
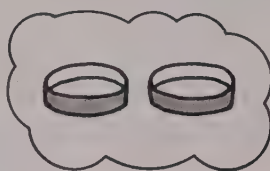
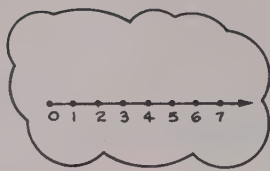
L $\begin{array}{r} 147 \\ -75 \\ \hline \end{array}$



You are invited to explore

**ACTIVITY
CARD 6**
Page 312

Investigating the Ideas



A $3 \times 1 = ?$

B $0 \times 5 = ?$

C $2 \times 0 = ?$

D $1 \times 4 = ?$



How many of these products can you give correctly?
Check your answers with a classmate.

Discussing the Ideas

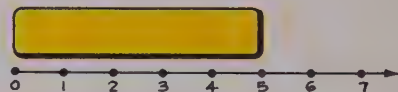
1. Think of cups and counters.

- A** How does this show 4×1 ?
- B** How would you show 1×4 ?
- C** How would you show 3×0 ?



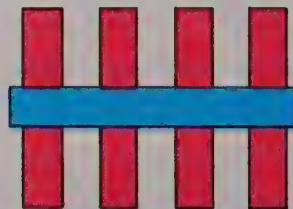
2. Think of strips and a number line.

- A** How does this show 1×5 ?
- B** How would you show 5×1 ?



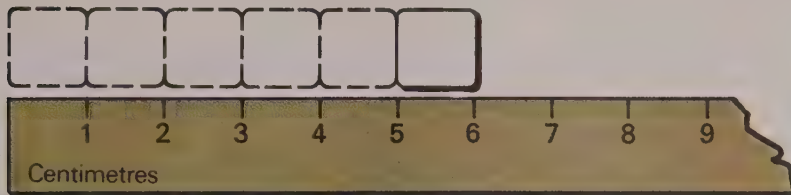
3. Think of the red and blue strips that cross.

- A** How does this show 4×1 ?
- B** How would you show 4×0 ?
- C** How would you show 0×4 ?



4. Can you give a rule for multiplying by 0? by 1?

1. Write a multiplication equation for the figure.



2. Complete the statements.

A The product of any number and **1** is ___?___.

B The product of any number and **0** is ___?___.

3. Find the products.

A $9 \times 0 = n$

D $1 \times 7 = n$

G $35 \times 1 = n$

B $0 \times 9 = n$

E $12 \times 0 = n$

H $0 \times 35 = n$

C $7 \times 1 = n$

F $1 \times 12 = n$

I $97 \times 0 = n$

4. Solve the equations.

A $8 \times n = 0$

D $19 \times n = 0$

G $n \times 62 = 62$

B $n \times 7 = 7$

E $1 \times 56 = n$

H $58 \times n = 0$

C $0 \times 6 = n$

F $74 \times n = 74$

I $0 \times 254 = n$

- ★ 5. Some of these equations have just **one** solution, some have **many** solutions, and some have **no** solution. Answer: **one, many, or none.**

A $n \times 6 = 0$

B $0 \times n = 6$

C $0 \times n = 0$

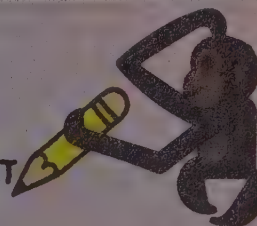
D $6 \times 0 = n$

E $n \times 0 = 0$

F $n \times 0 = 8$

think

MULTIPLY
SUBTRACT
ADD



1. What two numbers have a product of 20 and a difference of 19?
2. Find two numbers so that their product is less than their sum.

Investigating the Ideas

Here are some special pairs of "matching" trains.

 three 5-strips

 five 3-strips

 four 6-strips

 six 4-strips



Can you make some more special pairs of trains like these?

Record each pair you make.

Discussing the Ideas

1. **A** Do these two trains match?

B Can you write an equation about this?



$$3 \times 4$$



$$4 \times 3$$

2. Can you write an equation for each pair of trains in the Investigation?

3. Think of cups and counters.

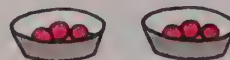
A How does this show that $3 \times 2 = 2 \times 3$?



3 cups, 2 in each

$$3 \times 2$$

B How would you use this idea to show that $5 \times 4 = 4 \times 5$?



2 cups, 3 in each

$$2 \times 3$$

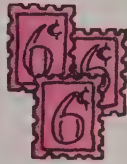
4. When we change the order of the __?__, we get the same __?__.

Using the Ideas

1. Answer the questions in the Short Stories for each part.
Then write a multiplication equation for the exercise.

- A** Three 6-cent stamps
cost how much?
(Answer: 18¢)

Six 3-cent stamps
cost how much?
(Answer: 18¢)
(Equation: $3 \times 6 = 6 \times 3$)



- C** 5 marbles in a bag.
7 bags.
How many marbles?

7 marbles in a bag.
5 bags.
How many marbles?



- B** 4 girls.
2 books each.
Total books?

2 girls.
4 books each.
Total books?

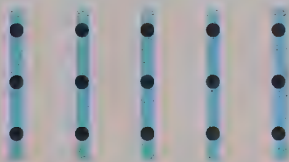


- D** 2 boys.
3 arrows each.
How many arrows?

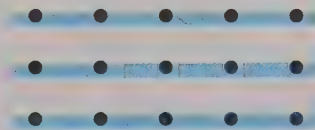
3 boys.
2 arrows each.
How many arrows?



2. We can think about 15 dots in two different ways.
Solve the equations.



$$5 \times 3 = n$$



$$3 \times 5 = n$$

3. Find the products.
Use the table.

- A** 92×65 **D** 71×17
B 24×84 **E** 82×34
C 47×38 **F** 27×56

$56 \times 27 = 1512$
 $34 \times 82 = 2788$
 $38 \times 47 = 1786$

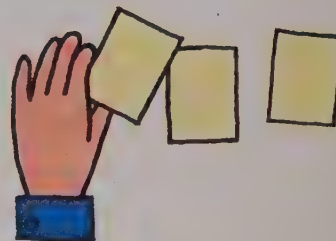
$65 \times 92 = 5980$
 $17 \times 71 = 1207$
 $84 \times 24 = 2016$

Investigating the Ideas

Make three slips of paper like these.
Then turn them over and mix them up.



Pick any **two** slips and multiply the numbers on them. Then multiply by the number on the other slip.



If you do this five times, will you get the same final product each time?

Discussing the Ideas

With the factors 2, 3, and 4

- A** we could multiply these first.

$$\begin{array}{c} \swarrow \searrow \\ 2 \times 3 \times 4 \\ (2 \times 3) \times 4 \end{array}$$
- B** we could multiply these first.

$$\begin{array}{c} \swarrow \searrow \\ 2 \times 3 \times 4 \\ 2 \times (3 \times 4) \end{array}$$
- C** we could multiply these first.

$$\begin{array}{c} \swarrow \searrow \\ 2 \times 3 \times 4 \\ (2 \times 4) \times 3 \end{array}$$
- or

- Answer these questions for A, B, and C. Which two factors are grouped together? What is their product? What is the final product?
- If we leave the order of three factors the same, we can state this principle about **grouping**:

When we multiply, we can change the **grouping** and get the same product.

In which example above did we change both **order** and **grouping**?

- Find each product. Use the groupings shown. In each part, check to see that the two different groupings give the same product.

A $(5 \times 1) \times 6$
 $5 \times (1 \times 6)$

B $(2 \times 2) \times 4$
 $2 \times (2 \times 4)$

C $(4 \times 2) \times 5$
 $4 \times (2 \times 5)$

- Find each product. Choose the grouping that is most helpful. Do not change the order.

A $7 \times 5 \times 2$

B $8 \times 10 \times 10$

C $593 \times 497 \times 0$

- Solve the equations.

A $(3 \times 7) \times 5 = n \times (7 \times 5)$

B $17 \times (4 \times 29) = (n \times 4) \times 29$

- Find the products.

A Since $(4 \times 6) \times 3 = 72$, we know that $4 \times (6 \times 3) = n$.

B Since $(5 \times 7) \times 2 = 70$, we know that $5 \times (7 \times 2) = n$.

- Find the products. Arrange the factors any way you choose.

A $5 \times 8 \times 2$ **B** $2 \times 9 \times 5$ **C** $4 \times 2 \times 1$ **D** $989 \times 7 \times 0$

- Find the products.

A Since $3 \times 4 \times 5 = 60$,
we know that $5 \times 3 \times 4 = n$.

B Since $8 \times 7 \times 6 = 336$,
we know that $7 \times 8 \times 6 = n$.

- Find the products.

Use the table on the right.

A $3 \times 27 \times 6$

E $4 \times 27 \times 5$

B $5 \times 8 \times 13$

F $65 \times 8 \times 4$

C $4 \times 65 \times 9$

G $3 \times 7 \times 17$

D $17 \times 4 \times 6$

H $13 \times 9 \times 8$

$5 \times 27 \times 4 = 540$

$17 \times 6 \times 4 = 408$

$8 \times 13 \times 9 = 936$

$6 \times 3 \times 27 = 486$

$17 \times 7 \times 3 = 357$

$8 \times 5 \times 13 = 520$

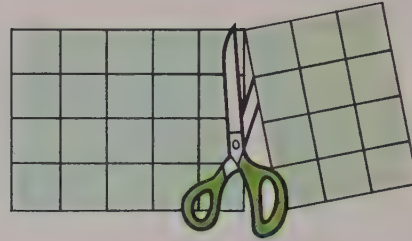
$65 \times 9 \times 4 = 2340$

$8 \times 4 \times 65 = 2080$

Investigating the Ideas

Cut three 8 by 4 rectangles from graph paper. Color each one a different color.

One way to think about these 8 fours is shown by this cut.



5 fours and 3 fours

?

Can you make different cuts in your rectangles to show other ways to think about 8 fours?

Record your results as shown above.

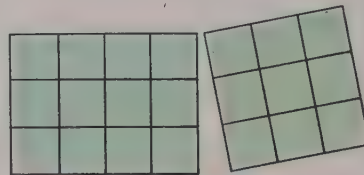
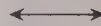
Discussing the Ideas

- To help you understand the multiplication-addition principle, think of "breaking apart" a factor before you multiply. Find the missing numbers.



7 threes

$$(7 \times 3)$$


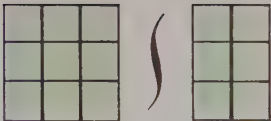


4 threes and 4 threes

equals $(4 \times 3) + (4 \times 3)$

- These are other examples of the multiplication-addition principle. Give the missing numbers.
 - 8 fives equals 6 fives and ___?___ fives.
 - 6 eights equals ___?___ eights and 2 eights.
 - 7 sixes equals 5 sixes and ___?___ sixes.

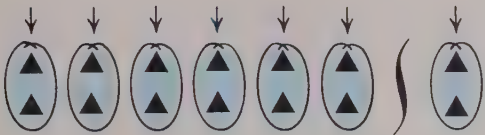

1. Solve the equations.

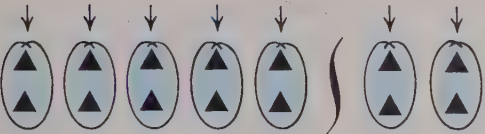

We see :  \longleftrightarrow 

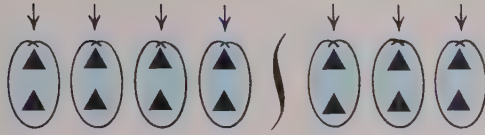

We think : 5 threes \longleftrightarrow 3 threes and 2 threes

We write : $5 \times 3 = n$ \longleftrightarrow $(3 \times 3) + (2 \times 3) = n$

2. Give the missing number of twos.

A 7 sets of 2  \rightarrow For 7 sets of two, we can think 6 twos and  two.





B 7 sets of 2  \rightarrow For 7 sets of two, we can think 5 twos and  twos.

C 7 sets of 2  \rightarrow For 7 sets of two, we can think 4 twos and  twos.

3. Solve the equations.

A $7 \times 2 = (6 \times 2) + (n \times 2)$ **C** $7 \times 2 = (4 \times 2) + (n \times 2)$
B $7 \times 2 = (5 \times 2) + (n \times 2)$ **D** $7 \times 2 = (3 \times 2) + (n \times 2)$

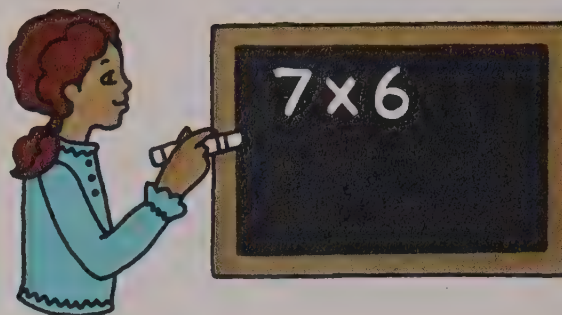
4. Give the missing number. Then solve the equation.

A For 6 sets of three, we can think 4 threes and  threes.
 $6 \times 3 = (4 \times 3) + (n \times 3)$ **C** For 8 sets of two, we can think 4 twos and  twos.
 $8 \times 2 = (4 \times 2) + (n \times 2)$
B For 5 sets of four, we can think 2 fours and  fours.
 $5 \times 4 = (2 \times 4) + (n \times 4)$ **D** For 4 sets of six, we can think 3 sixes and  sixes.
 $4 \times 6 = (3 \times 6) + (n \times 6)$

● Can the multiplication-addition principle help you find products?

Investigating the Ideas

Suppose you don't know 7×6 .



?

Can you show a way to find this product by using other products that you do know?

Discussing the Ideas

1. Here is the way Eric thought about using the multiplication-addition principle to find 7×6 .

When you want to multiply by a number

you can multiply by part of it

and then by the rest of it

$$7 \times 6 = (4 \times 6) + (3 \times 6)$$

Explain how to use the same idea to find 8×5 .

2. Diane is thinking about the multiplication-addition principle. Explain Diane's thinking.



When I multiply, I can "break apart" a factor.



$$6 \times 5 = (4 \times 5) + (2 \times 5)$$

1. Solve the equations.

A 7 fours \rightarrow ? fours and 3 fours

$$7 \times 4 = (n \times 4) + (3 \times 4)$$

B 7 fours \rightarrow 5 fours and ? fours

$$7 \times 4 = (5 \times 4) + (n \times 4)$$

C 7 fours \rightarrow 6 fours and ? fours

$$7 \times 4 = (6 \times 4) + (n \times 4)$$

D 8 fives \rightarrow ? fives and 6 fives

$$8 \times 5 = (n \times 5) + (6 \times 5)$$

E 8 fives \rightarrow 7 fives and ? fives

$$8 \times 5 = (7 \times 5) + (n \times 5)$$

think

Tom is 4 years older than his younger sister and 6 years older than his younger brother. The sum of their ages is 26. How old is each child?

4 YEARS OLDER
6 YEARS OLDER



2. Find the products.

A $\left. \begin{array}{l} 2 \times 2 = 4 \\ 3 \times 2 = 6 \end{array} \right\} 5 \times 2 = n$

D $\left. \begin{array}{l} 3 \times 2 = 6 \\ 4 \times 2 = 8 \end{array} \right\} 7 \times 2 = n$

B $\left. \begin{array}{l} 2 \times 3 = 6 \\ 3 \times 3 = 9 \end{array} \right\} 5 \times 3 = n$

E $\left. \begin{array}{l} 3 \times 3 = 9 \\ 4 \times 3 = 12 \end{array} \right\} 7 \times 3 = n$

C $\left. \begin{array}{l} 6 \times 5 = 30 \\ 2 \times 5 = 10 \end{array} \right\} 8 \times 5 = n$

F $\left. \begin{array}{l} 3 \times 7 = 21 \\ 5 \times 7 = 35 \end{array} \right\} 8 \times 7 = n$

3. Find the products.

A Since $5 \times 8 = 40$,
we know that $6 \times 8 = n$.

C Since $6 \times 8 = 48$,
we know that $7 \times 8 = n$.

B Since $5 \times 9 = 45$,
we know that $6 \times 9 = n$.

D Since $7 \times 6 = 42$,
we know that $8 \times 6 = n$.



● Let's look at some of the easier multiplication facts.

Discussing the Ideas

1. "0" and "1" facts

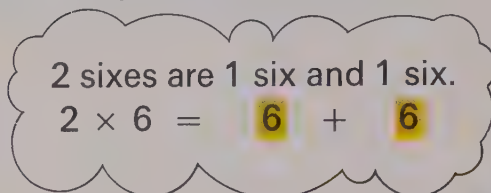
- A** What do you know about multiplying by **0** and **1** that will help you fill in the **0** and **1** rows in a multiplication table?
- B** Where are the "0" and "1" columns in the table? What makes it easy to fill in these columns?

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

2. "2" facts

How can the "1" facts help you find the "2" facts?

The picture may help.



×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2					12			



3. Give the products for **A** through **H** in this table.

- 4. A** If you know the product for **B**, it is easy to find the product for **I**. Why?
- B** Give the products for **I** through **O**.

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2			A	B	C	D	E	F	G	H
3			I							
4			J							
5			K							
6			L							
7			M							
8			N							
9			O							

Using the Ideas

1. Study the picture to see how the "1" and "2" facts can help you find the "3" facts.

3 sixes are 2 sixes and 1 six.

$$3 \times 6 = 12 + 6$$

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6				18			

- A What are 2 sevens and 1 seven?
B What is 3×7 ?



2. Give the products **A** through **G** in the table.
3. Use the order principle and the facts in the "3" row to quickly give the products for the "3" column (**H** through **M**).
Example: $3 \times 4 = 12$ (**B**),
so $4 \times 3 = 12$ (**H**).

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3				A	B	C	D	E	F	G
4				H						
5				I						
6				J						
7				K						
8				L						
9				M						

4. Find the products.

A 6×1 C 4×3 E 3×8 G 5×3 I 7×3
B 2×8 D 3×0 F 0×9 H 1×8 J 0×5

5. Find the products.

A $\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$ B $\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$ C $\begin{array}{r} 4 \\ \times 0 \\ \hline \end{array}$

6. Copy and give the missing numbers.

A 2, 4, 6, 8, $\frac{10}{2}$, $\frac{12}{3}$, $\frac{14}{7}$, 16, $\frac{18}{9}$
B 3, 6, 9, $\frac{12}{4}$, $\frac{15}{5}$, 18, $\frac{21}{7}$, $\frac{24}{8}$, 27

7. Give the missing products.

D $\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$ E $\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$ F $\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$

G $\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$ H $\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$ I $\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$

×	5
1	A
2	B
3	C

×	8
1	D
2	E
3	F

×	9
1	G
2	H
3	I

● What are the facts when 4 and 5 are factors?

Discussing the Ideas

1. If you have learned the "0," "1," "2," and "3" facts, how many more multiplication facts in the table do you have left to learn?

2. A Study the small table.

X	0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4						20		28		

How can the "1" and "3" facts help you find the "4" facts?
How can the "2" facts help you find the "4" facts?

3. A Study the small table. How can "2" and "3" facts help you find the "5" facts?

X	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
5							30			

- B Find the facts for A through E.
Then find the facts for F through I.

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4						A	B	C	D	E
5					G					
6					H					
7					I					
8					J					
9					K					

- B Find facts for A through F.
Then find facts for G through K.

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5							A	B	C	D
6							F			
7							G			
8							H			
9							I			

1. Copy and complete.

A 4, 8, 12, , , 24, , , 36

B 5, 10, , , , , 35, , 

2. Copy and complete each table.

A

×	6
1	
3	
4	

B

×	8
1	
2	
4	

C

×	9
1	
3	
4	

D

×	7
1	
4	
5	

E

×	8
2	
3	
5	

F

×	9
2	
4	
5	

3. Find the products.

A 1×4

F 6×4

K 4×8

P 4×5

U 9×5

B 2×4

G 7×4

L 4×6

Q 5×5

V 5×4

C 3×4

H 8×4

M 1×5

R 6×5

W 5×6

D 4×4

I 9×4

N 2×5

S 7×5

X 5×5

E 5×4

J 4×7

O 3×5

T 8×5

Y 5×9

4. If you know the facts up through the "5" facts, how many facts do you have left to learn?

★ 5. Use the "5" and the "4" facts to find these "9" facts.

A 9×6

C 9×7

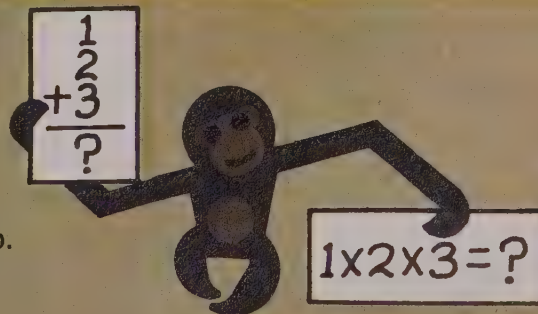
B 9×8

think

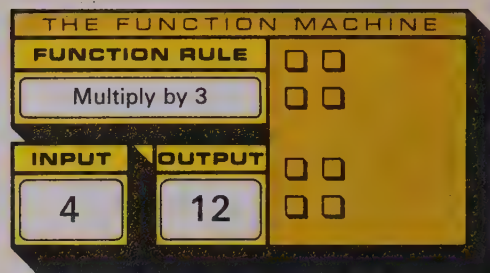
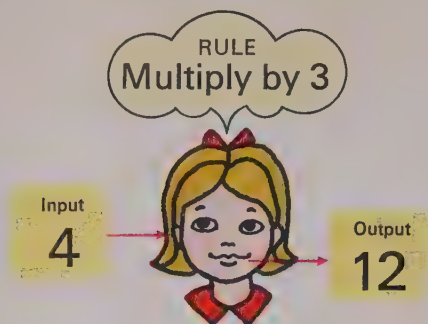
Add the numbers
one, two, three.

Now find their product too.
I'm the answer either way,
Whichever one you do.

WHO AM I?



Function Machine Problems



Think about the function machine and give the missing number or rule.

1. Function Rule

Multiply by 3	
Input	Output
2	6
9	27
A	8
B	5
C	7

2. Function Rule

Multiply by 4	
Input	Output
2	8
A	4
B	9
C	6
D	8

3. Function Rule

Multiply by 5	
Input	Output
3	15
A	7
B	9
C	6
D	8

4. Function Rule

A	
Input	Output
2	10
3	15
7	35
B	6
C	20

★ 5. Function Rule

Multiply by 2	
Input	Output
2	4
A	5
B	8
C	14
D	12

★ 6. Function Rule

A	
Input	Output
2	4
3	9
5	25
B	4
C	1

Multiplication Practice

1. Find the products.

"0" facts

A	6×0	E	3×0	I	7×0
B	0×3	F	0×5	J	5×0
C	4×0	G	0×1	K	1×0
D	9×0	H	0×0	L	0×8

"1" facts

A	1×4	E	7×1	I	9×1
B	3×1	F	4×1	J	1×6
C	6×1	G	1×1	K	1×7
D	1×8	H	1×0	L	5×1

"2" facts

A	2×7	E	8×2	I	2×3
B	4×2	F	0×2	J	1×2
C	2×5	G	2×2	K	2×6
D	3×2	H	5×2	L	2×9

"3" facts

A	6×3	E	3×3	I	3×2
B	3×1	F	3×0	J	3×4
C	3×6	G	4×3	K	5×3
D	7×3	H	3×8	L	3×9

"4" facts

A	4×5	E	4×9	I	4×2
B	1×4	F	4×0	J	0×4
C	4×8	G	6×4	K	4×4
D	5×4	H	3×4	L	7×4

"5" facts

A	5×4	E	5×9	I	5×2
B	5×3	F	3×5	J	6×5
C	2×5	G	1×5	K	5×5
D	4×5	H	5×8	L	7×5

2. Draw a table like this one.
Find the products not given.

\times	0	1	2	3	4	5	6	7	8	9
0										
1										
2					8				16	
3										
4			8					28		
5										

3. Find the products.

A	4 $\times 4$	B	4 $\times 5$	C	6 $\times 2$	D	6 $\times 3$
E	8 $\times 3$	F	8 $\times 4$	G	5 $\times 5$	H	5 $\times 6$
I	7 $\times 2$	J	7 $\times 3$	K	9 $\times 2$	L	9 $\times 4$

Discussing the Ideas

1. Study the small table.

- A How can the "2" and the "4" facts help you find the "6" facts?

×	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
4	0	4	8	12	16	20	24	28	32	36
6									48	

- B Give the products for A through D in the "6" row of the large table.

2. What other two rows could you use to help you find the products in the "6" row?

3. Use the order principle and give the products for E through G in the "6" column.

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6							A	B	C	D
7							E			
8							F			
9							G			

4. Explain how to use the products given in the table to help find the products for H, I, and J in the "7" row.

5. What other two rows could you have used to find the products in the "7" row? Explain.

6. Give the products for K and L.

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3								21	24	27
4								28	32	36
5										
6										
7								H	I	J
8								K		
9								L		

1. Solve the equations.

A $3 \times 7 = 21 \rightarrow 6 \times 7 = n$ **C** $2 \times 6 = 12 \rightarrow 4 \times 6 = n$

B $5 \times 8 = 40 \rightarrow 6 \times 8 = n$ **D** $2 \times 6 = 12 \rightarrow 6 \times 6 = n$

2. Copy and complete the tables.

A

\times	5
1	
5	
6	

B

\times	6
2	
4	
6	

C

\times	7
3	
4	
6	

D

\times	8
4	
2	
6	

E

\times	9
5	
1	
6	

3. Copy and complete the tables.

A

\times	5
3	
4	
7	

B

\times	8
3	
4	
7	

C

\times	6
5	
2	
7	

D

\times	9
2	
5	
7	

E

\times	7
6	
1	
7	

4. Find the products.

A 0×6 **C** 2×6 **E** 4×6 **G** 6×6 **I** 8×6
B 1×6 **D** 3×6 **F** 5×6 **H** 7×6 **J** 9×6

5. Find the products.

A $\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$ **B** $\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$

C $\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$ **D** $\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$

E $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$ **F** $\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$

think



Whenever I'm a factor,
I think I'm quite a hero.
You'll always get a product
That ends in five or zero.

WHO AM I?

● What are the facts when 8 and 9 are factors?

Discussing the Ideas

×	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3									24	27
4										
5									40	45
6										
7										
8									A	B
9									C	D



1. Explain how to use the products in the "3" row and the "5" row to find the products for **A** and **B** in the "8" row.
2. Explain how the fact $4 \times 8 = 32$ can be used to find 8×8 .
3. What other two rows could you use to find the products in the "8" row? Explain.
4. **A** How can the fact $7 \times 9 = 63$ be used to find 8×9 ?
B What is the product for **B** in the table?
5. **A** Why is the product for **C** the same as the product for **B**?
B What is the product for **C**?
6. **A** What two rows could you use to find the product for **D** in the "9" row?
B Find the product for **D** in the table.
7. How can the fact $10 \times 9 = 90$ be used to find 9×9 ?
8. How can the fact that $3 \times 9 = 27$ be used to find 9×9 ?

1. Copy and complete the tables.

A

×	6
4	
5	
9	

B

×	9
6	
2	
8	

C

×	9
4	
5	
9	

D

×	8
3	
6	
9	

E

×	9
1	
3	
7	

2. Find the products.

A 8×0

E 8×4

I 8×8

M 9×2

Q 9×6

B 8×1

F 8×5

J 8×9

N 9×3

R 9×7

C 8×2

G 8×6

K 9×0

O 9×4

S 9×8

D 8×3

H 8×7

L 9×1

P 9×5

T 9×9

3. Find the products.

A 4×5

I 5×3

B 3×8

J 7×3

C 2×9

K 7×8

D 0×7

L 8×8

E 6×1

M 6×7

F 5×6

N 6×6

G 4×4

O 9×7

H 8×4

P 9×9

think

MULTIPLY
BY ?



Multiply me by myself.
You're almost up to fifty.
Though I am a little odd,
I think I'm pretty nifty.

WHO AM I?

4. Find the products.

A $\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$

B $\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$

C $\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$

D $\begin{array}{r} 4 \\ \times 5 \\ \hline \end{array}$

E $\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$

F $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$

G $\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$

H $\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$

I $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$

J $\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$

K $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$

L $\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$

M $\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$

N $\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$

O $\begin{array}{r} 6 \\ \times 1 \\ \hline \end{array}$

P $\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$

Q $\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$

R $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$





S $\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$

T $\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$

U $\begin{array}{r} 0 \\ \times 8 \\ \hline \end{array}$

Short Picture Problems

1. IF 1  5  THEN 6  ? 

2. IF 1  8  THEN 4  ? 

3. IF 1  9  THEN 3  ? 

4. IF 1  6  THEN 7  ? 

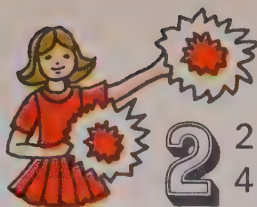
5. IF 1  3  THEN 9  ? 

★ 6. IF 1  4  THEN ?  24 

★ 7. IF 1  ?  THEN 7  21 

Short Sport Stories

- 1** 2 hockey teams.
6 players on each team.
How many players?



- 2** 2 basketball teams.
4 cheerleaders for each team.
How many cheerleaders?



- 3** Baseball game.
6 outs each inning.
9 innings.
How many outs?



- 6** Tennis.
9 courts.
4 players on each court.
How many players?

- 4** Red Sox.
3 outs each inning.
9 innings.
How many outs?

- 5** Hockey game.
3 periods.
8 penalties each period.
How many penalties?



- Bowling. 8 balls in each rack. 7 racks. How many bowling balls?



- Baseball. 3 strikes, you're out.
8 strikeouts. How many strikes?

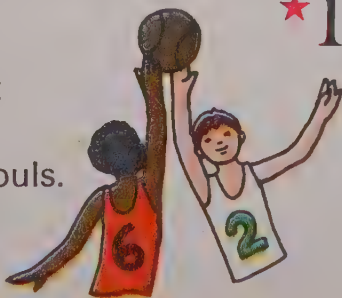


- 9** Football game.
6 points for a touchdown.
5 touchdowns.
How many points?

- 10** Football game.
6 points for a touchdown.
7 touchdowns.
How many points?

- 11** Softball. 9 players on each team.
7 teams. How many players?

- 12** Basketball.
5 fouls, you're out of the game.
4 players out on fouls.
How many fouls for these players?



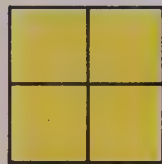
- ★ **13** Football.
6 points for a touchdown.
Bulldogs scored 8 touchdowns and 4 extra points.
What was their score?

Investigating the Ideas

Some "Square Facts"



$$1 \times 1 = 1$$



$$2 \times 2 = 4$$



$$3 \times 3 = 9$$



Can you cut squares from graph paper to show the other square facts up to 9×9 ?

Discussing the Ideas

1. Is $(3 \times 3) + (4 \times 4) = (5 \times 5)$?
2. Find the number for n .
 $(6 \times 6) + (8 \times 8) = (n \times n)$
3. The "5" facts are easy. What pattern do you see for the ones digits for the "5" facts?
4. What patterns do you notice in the "9" facts? List all the "9" facts.

$$0 \times 5 = 0$$

$$1 \times 5 = 5$$

$$2 \times 5 = 10$$

$$3 \times 5 = 15$$

$$4 \times 5 = 20$$

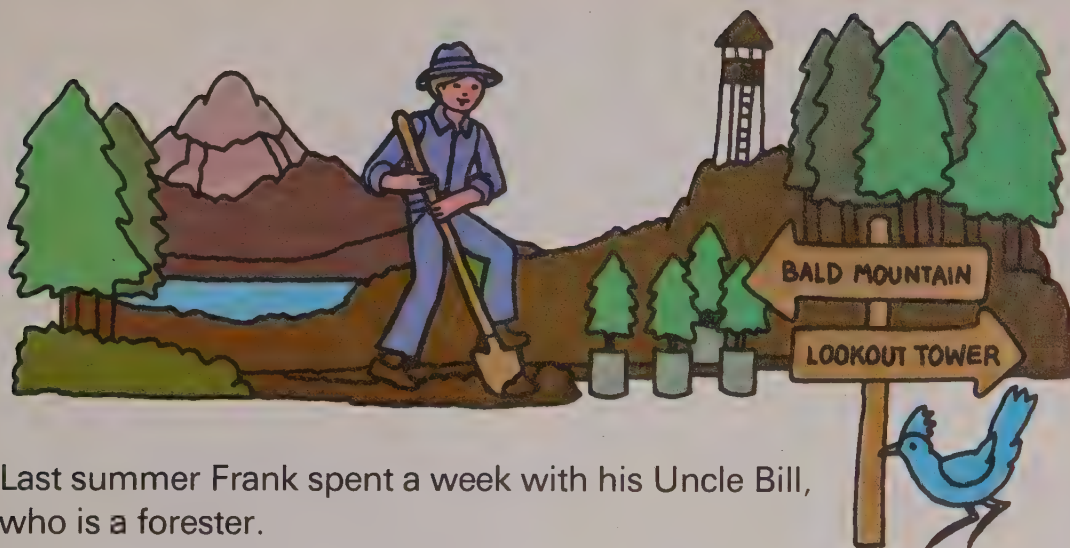
$$2 \times 9 = 18 \quad \text{1} + 8 = ?$$

$$3 \times 9 = 27 \quad \text{2} + 7 = ?$$

$$4 \times 9 = 36 \quad \text{3} + 6 = ?$$

5. Can you list all the whole numbers less than 9×9 that are not products for any of the basic facts?

THE FORESTER



Last summer Frank spent a week with his Uncle Bill, who is a forester.

1. Frank helped his uncle plant some small pine trees. Frank planted 3 rows of trees. He put 8 trees in each row. How many trees did he plant?
2. Frank learned how to build a fire without matches. Uncle Bill let Frank build the fires for 3 meals each day. Frank stayed 7 days. How many fires did he build?
3. Uncle Bill showed Frank some fish that were to be put in Blue Lake. The fish were in cans. Frank counted 9 cans. There were 8 fish in each can. How many fish were there?
4. Frank helped Uncle Bill put signs on trees. They posted signs on trees along 4 different trails. They put 9 signs on each trail. How many signs did they post?
5. Frank looked at Bald Mountain through a telescope. His uncle said, "It is 7 kilometres from this tower straight to the top of Bald Mountain. But since you can't fly, it is 5 times as far by the trail." How many kilometres long is the trail from the tower to the top of the mountain?

Practice in Multiplication Facts

1. Give the product for n in each equation.

A $3 \times 4 = n$	D $3 \times 7 = n$	G $5 \times 3 = n$	J $7 \times 1 = n$
B $6 \times 3 = n$	E $4 \times 6 = n$	H $6 \times 5 = n$	K $0 \times 8 = n$
C $4 \times 5 = n$	F $2 \times 9 = n$	I $5 \times 2 = n$	L $3 \times 8 = n$

2. How can you use your answers in the equations above to find the missing factors in these equations? Find the missing factors.

A $n \times 2 = 10$	D $n \times 5 = 30$	G $n \times 9 = 18$	J $n \times 8 = 0$
B $7 \times n = 7$	E $3 \times n = 12$	H $5 \times n = 15$	K $n \times 8 = 24$
C $6 \times n = 18$	F $4 \times n = 20$	I $n \times 7 = 21$	L $n \times 6 = 24$

3. Draw a set of 12 dots on your paper. Ring sets of 3 to find how many threes in 12. Write a multiplication equation about this.

4. Draw a set of 20 dots on your paper. Ring sets of 4 to find how many fours in 20. Write a multiplication equation about this.

5. Find the missing factors.

A $3 \times n = 9$
B $n \times 4 = 16$
C $n \times 1 = 7$
D $n \times 5 = 15$
E $n \times 9 = 0$
F $n \times 5 = 25$
G $4 \times n = 4$
H $n \times 3 = 12$
I $2 \times n = 14$
J $n \times 2 = 12$
K $9 \times n = 18$

think

When you multiply by me,
I really am quite tame.
No matter what the factor is,
The product stays the same.

WHO AM I?



6. Find the missing factors.

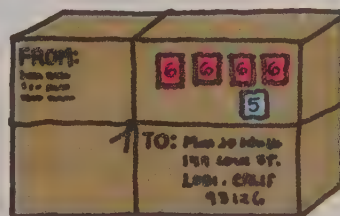
A $\begin{array}{r} \text{ } \\ \times 3 \\ \hline 12 \end{array}$	B $\begin{array}{r} 3 \\ \times \text{ } \\ \hline 9 \end{array}$	C $\begin{array}{r} 5 \\ \times \text{ } \\ \hline 10 \end{array}$	D $\begin{array}{r} 4 \\ \times \text{ } \\ \hline 0 \end{array}$	E $\begin{array}{r} 4 \\ \times \text{ } \\ \hline 12 \end{array}$	F $\begin{array}{r} \text{ } \\ \times 5 \\ \hline 15 \end{array}$	G $\begin{array}{r} \text{ } \\ \times 2 \\ \hline 18 \end{array}$	H $\begin{array}{r} \text{ } \\ \times 5 \\ \hline 25 \end{array}$
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Solving Story Problems

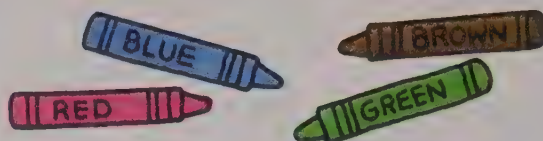
THE POST OFFICE



1. Jill bought eight 6-cent stamps. How much did they cost?
2. She bought six 8-cent stamps. How much did she spend for them?
3. Jill saw some 1-cent stamps. She counted 3 rows and 9 stamps in each row. How many 1-cent stamps did she see?
4. 6-cent stamps come to the post office in sheets with 10 rows and 10 columns. How many stamps are in each sheet?
5. Jill bought 24 airmail stamps. She bought 4 times as many as Kay. How many airmail stamps did Kay buy?
6. Kay pasted 15 stamps in her collection book. She had 5 rows. How many were there in each row?
7. Which cost more, nine 5-cent stamps or seven 6-cent stamps?
8. Jan spent 32 cents for 8-cent stamps. How many stamps did she buy?
- ★ 9. Bill needed 29 cents' worth of stamps to mail his package. He had only 5-cent, 6-cent, 7-cent, and 8-cent stamps. He wanted to use only **2 different kinds** of stamps. One way to stamp the package is given in the picture.
 - A Find another way, using 7-cent and 8-cent stamps.
 - B Find another way, using 5-cent and 8-cent stamps.
 - C Find another way.



Investigating the Ideas



4 crayons



square



circle

2 types of figures

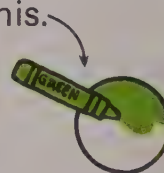
You are to choose **1 crayon** and **1 figure** to color.

One choice might be green, **circle**. You would do this.



How many different choices do you think there are?

Show them.



Discussing the Ideas

Sue is getting her mother a birthday present.

She will get her an apron or gloves.

She will put the gift in one of the 3 boxes shown below.



What might Sue's mother find when she unwraps this package?

1. Which gift and box would you choose?
2. Sue finally decided to get the gloves. She put them in the box with the stars. What would your choices have been? Give as many different choices as you can.

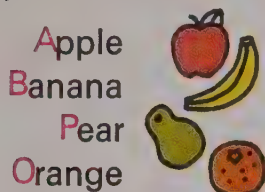
3. Solve:

Number of gifts to choose from	Number of boxes to choose from	Number of different choices possible
--------------------------------	--------------------------------	--------------------------------------

$$2 \times 3 = n$$

Using the Ideas

1. You can have one piece of fruit.



- One piece of candy.



- One of each.

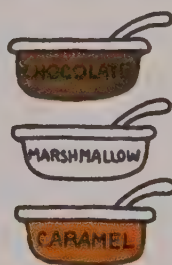


- A How many different pieces of fruit are there?
B How many different pieces of candy are there?
C Name all the possible choices that could be in the sack.
Use the red letters to stand for each object.
D Solve: $4 \times 3 = n$

2. 3 flavors of ice cream.



- 3 kinds of syrup.



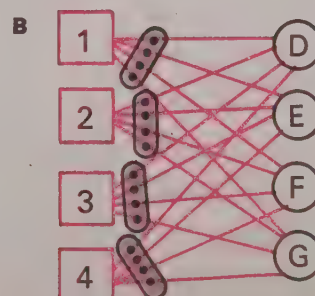
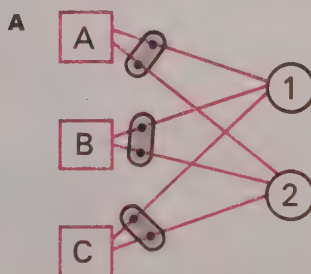
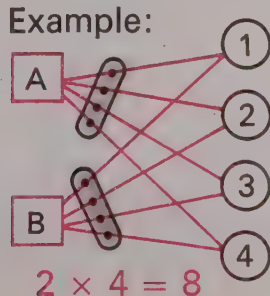
- One of each.



- A How many different sundaes can you make? List them.
B Solve: $3 \times 3 = n$

3. Write a multiplication equation for each picture.
The small dots help you count the red lines that pair the squares with the circles.

Example:



Solving Story Problems

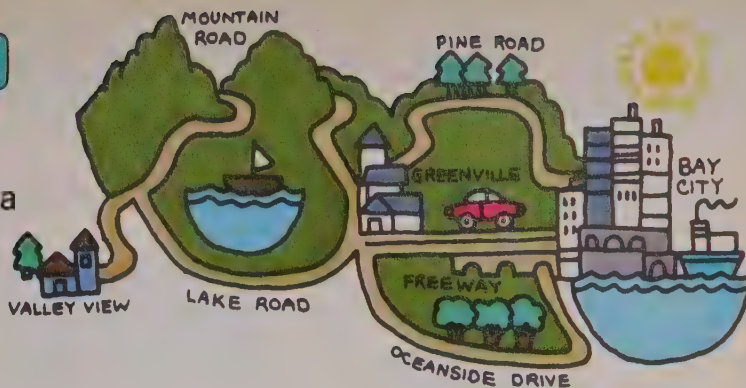
At the CARNIVAL

1. In the Fun House, there are 3 doors (A, B, and C) leading from the Noise Room to the Mirror Room. There are 4 doors (D, E, F, and G) leading from the Mirror Room to the Dark Room.
 - A There are 12 ways to get from the Noise Room to the Dark Room. See if you can find them all.
 - B Write a multiplication equation about this.
2. There are 2 sizes of ice cream cones. There are 6 flavors to choose from.
 - A How many different ice cream cones could you buy?
 - B Write a multiplication equation about this.
- ★ 3. David and Michael each had 1 ticket for rides. There were 4 things they could ride: the merry-go-round, ferris wheel, airplanes, and roller coaster.
 - A Give all the ways David and Michael could use their tickets.
 - B Write a multiplication equation about this.



Planning a Trip

1. Stuart lives in Valley View. When he was helping plan a family trip to Bay City, he thought about these questions. See if you can answer them.



- A In how many ways can we drive from Valley View to Greenville?
- B In how many ways can we drive from Greenville to Bay City?
- C What are the 6 ways to drive from Valley View to Bay City?
- D What multiplication equation can we write about these ideas?

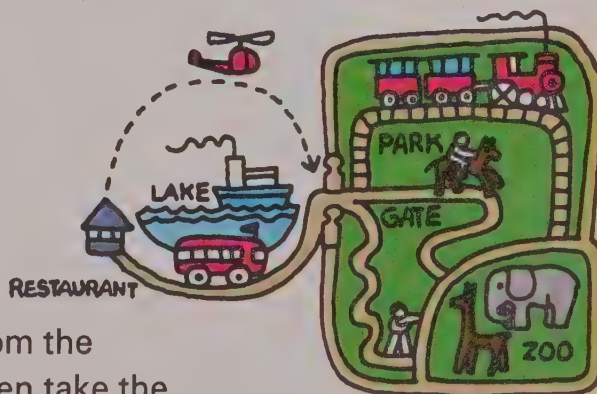
2. Stuart and his sister made plans for the day in Bay City. Here is the list of things they wanted to do.

- A How many afternoon choices are on the list?
- B How many evening choices are on the list?
- C Use the list to give all the possible ways they could spend the day. (You should find 8 ways.)
- D Write a multiplication equation about these ideas.

AFTERNOON
MUSEUM
AIRPORT
ZOO
AMUSEMENT PARK
EVENING
MOVIE
HOCKEY GAME

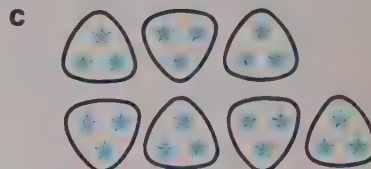
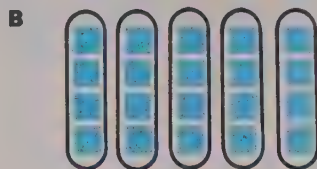
3. Stuart and his family can take the **helicopter**, the **boat**, or the **bus** from the restaurant to the park gate.

To get from the gate to the zoo, they can ride the small **train**, ride the **pony**, or **walk**.



- A Stuart wanted to take the boat from the restaurant to the park gate and then take the train from the gate to the zoo. Brenda wanted to take the helicopter and then the pony. Find as many more ways as you can to get from the restaurant to the zoo.
- B Write a multiplication equation about these ideas.

1. Write multiplication equations for each exercise.

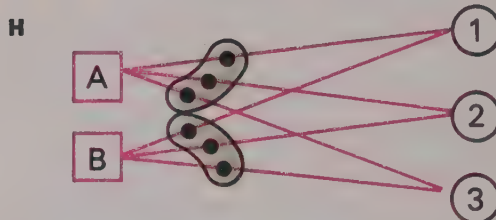


D $5 + 5 + 5 + 5 + 5 + 5$

E $8 + 8 + 8 + 8$

F $4 + 4 + 4 + 4 + 4 + 4 + 4$

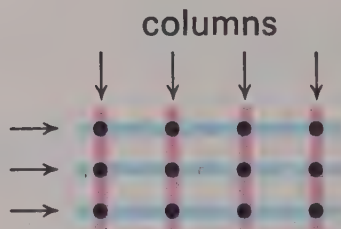
G $2 + 2 + 2 + 2 + 2$



2. Write a multiplication equation about this set by

A thinking about the rows.

B thinking about the columns.



3. Find the missing factors.

A $6 \times 7 = n \times 6$

C $27 \times 56 = n \times 27$

B $9 \times 8 = 8 \times n$

D $98 \times 76 = 76 \times n$

4. Complete each statement.

A The product of any number and one is $__?$.

B The product of any number and zero is $__?$.

5. Solve the equations.

A $5 \times 4 = (3 \times 4) + (n \times 4)$

B $8 \times 3 = (4 \times 3) + (n \times 3)$

C $7 \times 5 = (6 \times 5) + (n \times 5)$

5. Find the products.

A 6×0	I 2×7	Q Since $9 \times 6 = 54$, we know $6 \times 9 = n$.
B 1×8	J 5×4	R Since $6 \times 7 = 42$, we know $7 \times 6 = n$.
C 5×3	K 2×5	S Since $8 \times 6 = 48$, we know $6 \times 8 = n$.
D 2×6	L 5×6	T Since $9 \times 8 = 72$, we know $8 \times 9 = n$.
E 0×9	M 2×9	U Since $5 \times 5 = 25$, we know $6 \times 5 = n$.
F 5×5	N 5×7	V Since $6 \times 6 = 36$, we know $7 \times 6 = n$.
G 7×1	O 2×8	W Since $7 \times 7 = 49$, we know $8 \times 7 = n$.
H 4×3	P 6×2	X Since $8 \times 8 = 64$, we know $9 \times 8 = n$.

6. Find the products.

A 3×3	E 4×5	I 4×7	M 3×8	Q 4×6	U 6×9
B 7×8	F 7×7	J 6×8	N 4×9	R 7×9	V 3×7
C 3×4	G 3×9	K 5×8	O 3×6	S 3×5	W 4×8
D 6×7	H 8×8	L 4×4	P 6×6	T 9×9	X 8×9

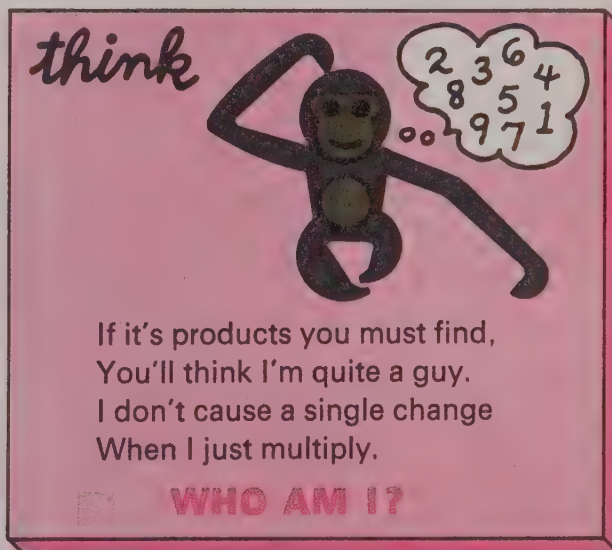
7. Complete the sentence.

Then find the product.

- A For 3 sets of 10, we write ||||| .
 $3 \times 10 = n$
- B For 5 sets of 10, we write ||||| .
 $5 \times 10 = n$
- C For 8 sets of 10, we write ||||| .
 $8 \times 10 = n$
- D For 7 sets of 10, we write ||||| .
 $7 \times 10 = n$

8. Solve the equations.

- A $(2 \times 7) + (3 \times 7) = n$
- B $(8 \times 7) + (2 \times 7) = n$
- C $(5 \times 9) + (5 \times 9) = n$
- D $(6 \times 8) + (4 \times 8) = n$
- E $(7 \times 7) + (3 \times 7) = n$
- F $(9 \times 8) + (1 \times 8) = n$



Keeping in Touch with

Addition
Subtraction
Place value

1. Find the sums.

A	3	B	8	C	5	D	7	E	8	F	4	G	4	H	9
	$+9$		$+3$		$+7$		$+7$		$+5$		$+9$		$+7$		$+6$

I	7	J	8	K	6	L	9	M	7	N	9	O	8	P	7
	$+8$		$+9$		$+8$		$+5$		$+9$		$+9$		$+8$		$+6$

2. Find the differences.

A	11	B	12	C	16	D	11	E	12	F	13	G	14	H	14
	-9		-8		-7		-8		-3		-8		-9		-7

I	11	J	17	K	13	L	12	M	15	N	16	O	18	P	15
	-6		-8		-7		-5		-7		-8		-9		-9

3. Find the sums.

A	62	B	35	C	16	D	328	E	457	F	615
	$+23$		$+24$		$+51$		$+160$		$+132$		$+204$

4. Find the differences.

A	89	B	68	C	586
	-23		-51		-212

5. Find the sums.

A	38	B	65	C	73
	$+27$		$+25$		$+18$
D	75	E	38	F	67
	$+86$		$+95$		$+67$

think



The product is even
When I multiply.
On words like bicycle,
My nickname is "bi."

WHO AM I?



6. Find the differences.

A $\begin{array}{r} 36 \\ -17 \\ \hline \end{array}$

B $\begin{array}{r} 43 \\ -24 \\ \hline \end{array}$

C $\begin{array}{r} 52 \\ -17 \\ \hline \end{array}$

D $\begin{array}{r} 58 \\ -29 \\ \hline \end{array}$

E $\begin{array}{r} 64 \\ -27 \\ \hline \end{array}$

F $\begin{array}{r} 80 \\ -68 \\ \hline \end{array}$

G $\begin{array}{r} 123 \\ -47 \\ \hline \end{array}$

H $\begin{array}{r} 144 \\ -58 \\ \hline \end{array}$

I $\begin{array}{r} 163 \\ -76 \\ \hline \end{array}$

J $\begin{array}{r} 150 \\ -68 \\ \hline \end{array}$

K $\begin{array}{r} 131 \\ -75 \\ \hline \end{array}$

L $\begin{array}{r} 155 \\ -67 \\ \hline \end{array}$

7. Find the sums.

A $60 + 9$

E $500 + 40$

B $200 + 40 + 7$

F $40 + 200 + 3$

C $600 + 10 + 4$

G $90 + 2 + 800$

D $900 + 2$

H $9 + 900 + 90$

8. Find the sums.

A $3000 + 600 + 20 + 8$

B $4000 + 200 + 80 + 9$

C $200 + 6 + 4000 + 30$

D $50 + 6000 + 200 + 6$

think



If you add me to myself
Then multiply by two,
It's 12 plus 4 you're
sure to get.
You need no other clue.

WHO AM I?

9. Study the example. Then write each number as shown in the example.

Example: $8295 = 8000 + 200 + 90 + 5$

A 654

B 892

C 4347

D 8126

E 87 265

F 27 615

★ 10. Copy each problem. Give the missing digit for each.

A $\begin{array}{r} \text{III} \\ -27 \\ \hline 12 \end{array}$

B $\begin{array}{r} \text{III} 3 \\ -36 \\ \hline 5 \end{array}$

C $\begin{array}{r} 84 \\ -3 \text{ III} \\ \hline \text{III} 7 \end{array}$

D $\begin{array}{r} \text{III} 4 \text{ III} \\ -237 \\ \hline 6 \text{ III} 2 \end{array}$

E $\begin{array}{r} 63 \text{ III} \\ -207 \\ \hline \text{III} \text{ III} 8 \end{array}$

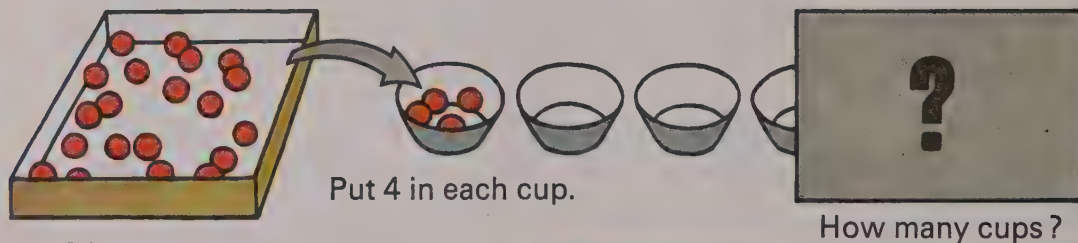


You are invited to explore

**ACTIVITY
CARD 7**
Page 312

● What is division?

Investigating the Ideas



24 counters

Number of counters	Counters in each cup	Number of cups	Division equation
24	4	?	$24 \div 4 = ?$
24	2	?	$24 \div 2 = ?$
24	3	?	$24 \div 3 = ?$
24	?	?	

?

Can you use counters and containers to help you complete the chart?

Discussing the Ideas

1. Give the missing numbers. Write a division equation for B.

We see

We think

We write

A 12 tomatoes



4 in each box



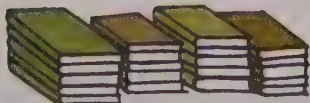
There are ||||
fours in 12.



$$12 \div 4 = 3$$

(Read: 12 divided by 4 equals 3.)

B 20 books



5 in each stack



There are ||||
fives in 20.

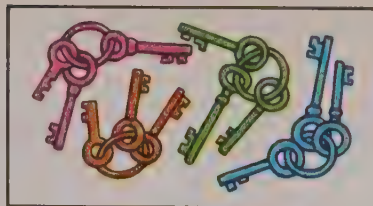


?

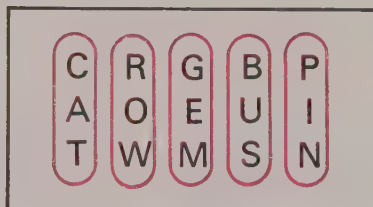
2. Make up an example like those above.

Using the Ideas

1. **A** How many keys in all?
B How many on each ring?
C How many rings?
D How many threes in 12?
E Solve: $12 \div 3 = n$



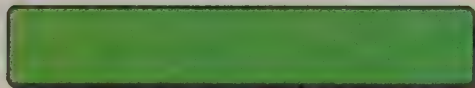
2. **A** How many letters in all?
B How many in each set?
C How many sets?
D How many threes in 15?
E Solve: $15 \div 3 = n$



3. **A** How many shoes in all?
B How many in each pair?
C How many pairs?
D How many twos in 10?
E Solve: $10 \div 2 = n$



4. **A** How long is the green strip?
B How many of the red strips are needed to match the green strip?
C How many twos in 6?
D Solve: $6 \div 2 = n$

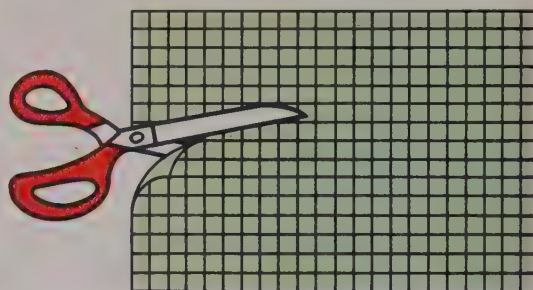


When you solved the equations above, you found the **quotient**.

5. Draw 21 dots. Ring as many sets of 3 as you can.
A How many sets of 3 did you find?
B How many threes in 21?
C Find the quotient: $21 \div 3 = n$
6. **A** Draw 24 dots. Ring as many sets of 4 as you can.
B Solve: $24 \div 4 = n$

Investigating the Ideas

How long do you think a rectangle with 28 squares would be if it were 4 units wide?



Can you cut from graph paper a rectangle with 30 squares that is 5 units wide?

Discussing the Ideas

- What division equation can you write about the rectangle you cut out?
- A Can you find some other rectangles that have 30 squares?

B Write division equations for each one you find.
- Give the missing numbers and solve the equations.

	Rectangle	Width	Length	Division equation
A	12 squares	2 units		$12 \div 2 = n$
B	15 squares	3 units		$15 \div 3 = n$
C	18 squares		6 units	$18 \div 6 = n$
D	16 squares	4 units		$16 \div 4 = n$

- Explain how you can use this “rectangular set” to get 2 division equations.



$$3 \times 8 = 24$$

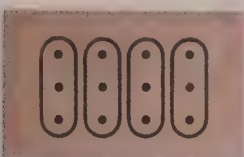
1. Look at the set. Then answer the question.

A



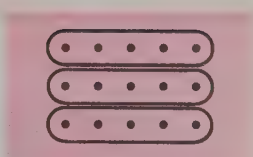
How many sets of 4 in a set of 8?

B



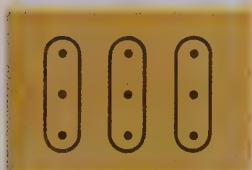
How many sets of 3 in a set of 12?

C



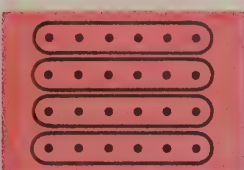
How many sets of 5 in a set of 15?

D



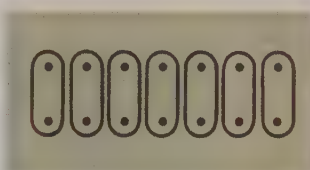
How many threes are in 9?

E



How many sixes are in 24?

F



How many twos are in 14?

2. Solve the equations. Your work in exercise 1 will help you.

A $8 \div 4 = n$

C $15 \div 5 = n$

E $24 \div 6 = n$

B $12 \div 3 = n$

D $9 \div 3 = n$

F $14 \div 2 = n$

Short Stories

1

15 chocolates.
3 in each row.

How many rows?



2

20 boys. 5 on a team. How many teams?

3

18 letters. 3 in each word. How many words?

4

24 books. 6 in each stack. How many stacks?



5

15 marbles. 5 in a sack. How many sacks?

6

16 white rats. 4 per cage. How many cages?

7

30 bottles of pop. 6 bottles in a carton. How many cartons?

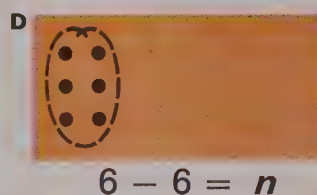
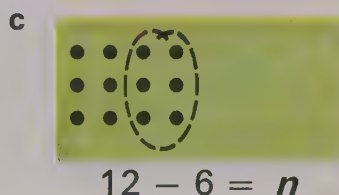
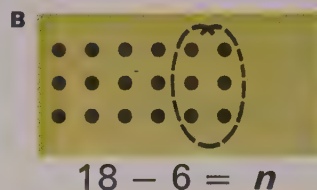
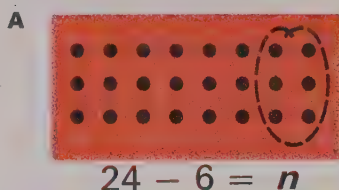
8

10 kilograms sugar. 2-kilogram bags. How many bags?



Discussing the Ideas

1. Think about removing the dots in the ring.
Then solve the subtraction equations.



2. **A** Study exercise 1 and tell how many sixes are in 24.
B Solve this equation. $24 \div 6 = n$
3. Study each example. Solve and explain the equation.

A

We can use addition to help us find products. 4×5
Since $5 + 5 + 5 + 5 = 20$, we know that $4 \times 5 = n$.

B

We can use subtraction to help us find quotients. $18 \div 6$

$$\begin{array}{r} 18 \\ -6 \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$$

Since we subtracted 6 three times, we know that $18 \div 6 = n$.

4. Explain how you could find $36 \div 3$ by subtracting.
Solve: $36 \div 3 = n$

1. A Find these differences.

$$\begin{array}{r} 24 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 16 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 12 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -4 \\ \hline \end{array}$$

- B How many times did you subtract 4?
C How many fours are in 24?
D Write a division equation about this.

2. A Find these differences.

$$\begin{array}{r} 21 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 18 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 15 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 12 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

- B How many times did you subtract 3?
C How many threes are in 21?
D Write a division equation about this.

3. A Find these differences.

$$\begin{array}{r} 30 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 25 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 15 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

- B How many times did you subtract 5?
C How many fives are in 30?
D Write a division equation about this.

4. Solve the equations.

$$\begin{array}{ll} \text{A } 15 - 5 = n & \text{B } 28 - 7 = n \\ 10 - 5 = n & 21 - 7 = n \\ 5 - 5 = n & 14 - 7 = n \\ 15 \div 5 = n & 7 - 7 = n \\ & 28 \div 7 = n \end{array}$$

think

NOVEMBER						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

- Find the sum along each arrow.
- Try this with any 3-by-3 square on any calendar.

- ★ 5. Find the quotients.

$$\begin{array}{ll} \text{A } 28 \div 2 & \text{C } 48 \div 4 \\ \text{B } 42 \div 3 & \text{D } 75 \div 5 \end{array}$$

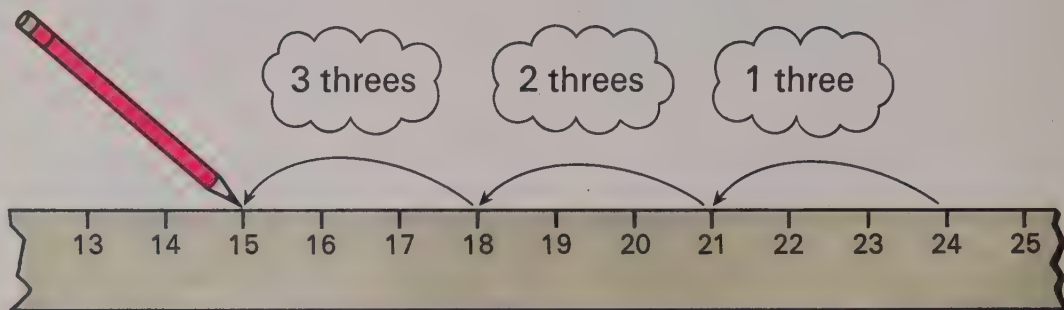
● Can the number line help you think about division?

Investigating the Ideas

Use your centimetre ruler as a number line. Starting at 24, it takes 8 jumps of three to get to zero.

There are 8 threes in 24.

$$24 \div 3 = 8$$



How many different division equations can you write to show other jumps you can make to get from 24 to zero?

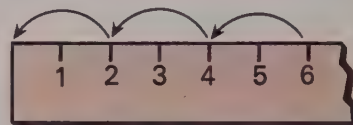
Discussing the Ideas

1. What division fact will you discover if you start at 18 on your ruler and jump back 2 at a time?
2. Explain why starting at 16 and jumping by threes will not give you a division fact.
3. Explain how each figure below helps you solve $6 \div 2 = n$.

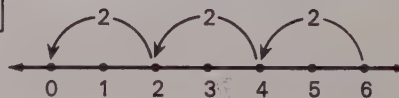
A



B



C



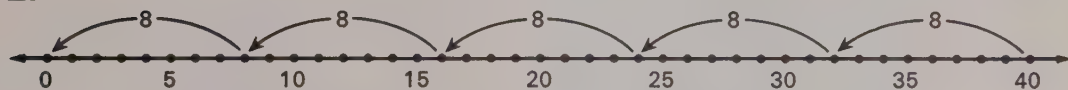
1.



A How many nines in 36?

B $36 \div 9 = n$

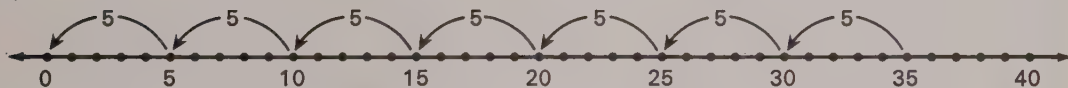
2.



A How many eights in 40?

B $40 \div 8 = n$

3.



A How many fives in 35?

B $35 \div 5 = n$

4. Draw a number line to help you find each of these.

A $14 \div 2$

B $12 \div 4$

C $20 \div 5$

D $16 \div 2$

Solving Story Problems

1. Mr. Smith paid \$15 for the children's baseball tickets. They were \$3 each. How many children went to the ball game with Mr. Smith?

2. The Blue Sox scored 2 runs in each inning until the scoreboard read — How many innings had they played then?

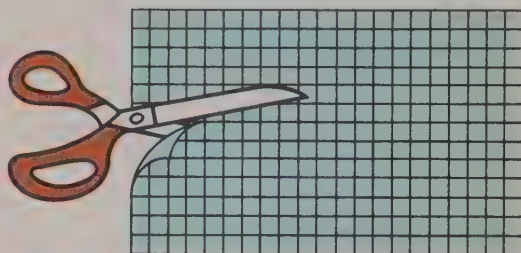
BLUE SOX	8
GREEN SOX	0

★ 3. Ted lived 36 kilometres from the ball park. Mr. Smith drove at the rate of 6 kilometres each 5 minutes. How long did it take to get from the ball park to Ted's house?

● Can you find quotients by finding missing factors?

Investigating the Ideas

Cut from graph paper as many different rectangles that have 36 squares as you can.



Can you complete this table with the help of your rectangles?

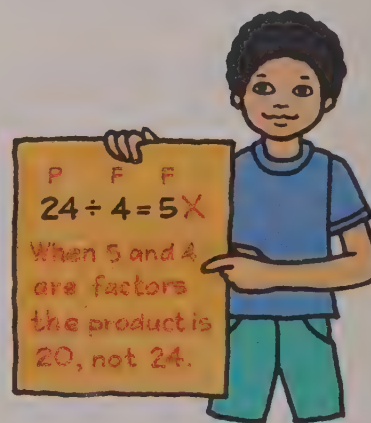
Number of squares in a row	Number of rows	Number of squares in the rectangle
6	×	?
9	×	?
?	×	3
18	×	?
?	×	1

Discussing the Ideas

1. On Friday, the children checked their arithmetic papers. Peter checked Judy's paper. Under one exercise, he wrote →

- A Explain what Peter was trying to tell Judy.
- B What do you think Peter would say about this equation?

$$18 \div 3 = 7$$



2. Find the missing factors and quotients. Explain your answers.

A

Think
 $? \times 5 = 20$
 $20 \div 5 = n$

B

Think
 $? \times 6 = 6$
 $6 \div 6 = n$

C

Think
 $? \times 7 = 14$
 $14 \div 7 = n$

1. Find the missing factors.

A

To find this quotient, I think
 $? \times 5 = 15$.



$$15 \div 5$$

B

To find this quotient, I think
 $? \times 3 = 12$.



$$12 \div 3$$

2. Find the quotients.

A

Think
 $? \times 2 = 6$
 $6 \div 2 = n$

B

Think
 $? \times 3 = 9$
 $9 \div 3 = n$

C

Think
 $? \times 4 = 8$
 $8 \div 4 = n$

3. Find the missing factors and quotients.

- A Since $n \times 4 = 8$, we know that $8 \div 4 = n$.
- B Since $n \times 3 = 9$, we know that $9 \div 3 = n$.
- C Since $n \times 5 = 15$, we know that $15 \div 5 = n$.
- D Since $n \times 3 = 15$, we know that $15 \div 3 = n$.
- E Since $n \times 5 = 20$, we know that $20 \div 5 = n$.

4. Find the quotients. Use multiplication to check your answers.

- A $24 \div 8 = n$
- B $30 \div 6 = n$
- C $27 \div 9 = n$
- D $12 \div 3 = n$
- E $27 \div 3 = n$
- F $21 \div 3 = n$
- G $16 \div 8 = n$

think

Our names you're sure to find
If you use this little clue.
Our product is 18,
While our quotient's only 2.

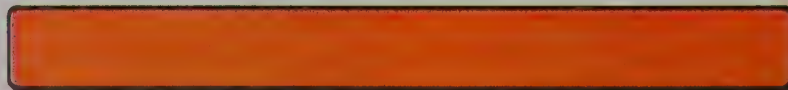
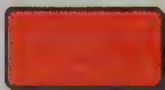
WHO ARE WE?

Discussing the Ideas

- For each example in the chart, solve the equation.
Explain your answer.

1	Sets	$15 \div 3 = n$	How many sets of 3 can we get from a set of 15?	→	
2	Subtraction	$15 \div 3 = n$	Starting with 15, how many times can we subtract 3?	→	
3	Missing factor	$15 \div 3 = n$	What number times 3 gives 15?	→	$n \times 3 = 15$

- Explain how you could use your 2-strip and 10-strip to find $10 \div 2$.



- How could you use a centimetre ruler to find $27 \div 3$?
- If you know $7 \times 8 = 56$, what two division facts can you give?

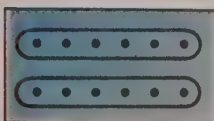
Using the Ideas

1. Write a division equation for each exercise.

A



B



C



2. Write a division equation for each exercise.

$$\begin{array}{r} 27 \\ -9 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 9 \\ -9 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 35 \\ -7 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 28 \\ -7 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 21 \\ -7 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$$

3. Solve the equations.

A $n \times 6 = 12$

B $n \times 3 = 9$

C $n \times 4 = 8$

D $n \times 2 = 10$

E $n \times 3 = 12$

F $n \times 5 = 25$

4. Now find the quotients.

A $12 \div 6 = n$

B $9 \div 3 = n$

C $8 \div 4 = n$

D $10 \div 2 = n$

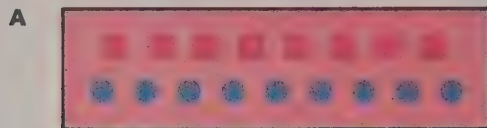
E $12 \div 3 = n$

F $25 \div 5 = n$

5. In each exercise, tell how many bags of marbles.

A	15 marbles		
B	20 marbles		
C	14 marbles		
D	18 marbles		
E	35 marbles		
F	28 marbles		

1. Write 2 addition and 2 subtraction equations for each figure.



2. Give the sums as quickly as you can.

A $5 + 4$

E $5 + 5$

I $8 + 9$

M $5 + 6$

Q $7 + 6$

B $6 + 2$

F $8 + 3$

J $3 + 7$

N $7 + 5$

R $9 + 9$

C $9 + 1$

G $7 + 7$

K $8 + 2$

O $8 + 8$

S $6 + 8$

D $4 + 6$

H $6 + 7$

L $3 + 5$

P $4 + 9$

T $7 + 8$

3. Give the differences as quickly as you can.

A $8 - 3$

E $13 - 8$

I $15 - 9$

M $14 - 6$

Q $12 - 7$

B $9 - 2$

F $15 - 7$

J $13 - 5$

N $9 - 4$

R $15 - 8$

C $6 - 5$

G $17 - 9$

K $14 - 5$

O $16 - 7$

S $10 - 3$

D $11 - 4$

H $16 - 8$

L $10 - 6$

P $18 - 9$

T $13 - 7$

4. List these numbers in order, from smallest to largest.

68 423

100 000

16 842

50 000

68 433

49 375

674 897

49 365

684 230

68 300

5. Do not try to find the correct answer. Just tell whether each answer is more than 70 or less than 70.

A $37 + 38$

D $17 + 58$

G $93 - 18$

J $95 - 26$

M $50 + 21$

B $27 + 38$

E $83 - 8$

H $93 - 28$

K $93 - 19$

N $80 - 11$

C $27 + 48$

F $83 - 18$

I $46 + 27$

L $15 + 54$

O $90 - 19$

6. Find the sums.

A $\begin{array}{r} 35 \\ +24 \\ \hline \end{array}$

B $\begin{array}{r} 35 \\ +25 \\ \hline \end{array}$

C $\begin{array}{r} 48 \\ +26 \\ \hline \end{array}$

D $\begin{array}{r} 57 \\ +19 \\ \hline \end{array}$

E $\begin{array}{r} 68 \\ +24 \\ \hline \end{array}$

F $\begin{array}{r} 73 \\ +14 \\ \hline \end{array}$

7. Find the sums.

$$\begin{array}{r} \text{A } 66 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B } 99 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C } 88 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D } 76 \\ +66 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E } 35 \\ +48 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F } 87 \\ +32 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G } 93 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H } 69 \\ +25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I } 46 \\ +58 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J } 57 \\ +48 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K } 76 \\ +64 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L } 19 \\ +27 \\ \hline \end{array}$$

8. Find the differences.

$$\begin{array}{r} \text{A } 83 \\ -22 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B } 92 \\ -33 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C } 57 \\ -34 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D } 61 \\ -59 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E } 122 \\ -34 \\ \hline \end{array}$$


$$\begin{array}{r} \text{F } 74 \\ -68 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G } 182 \\ -93 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H } 65 \\ -37 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I } 136 \\ -48 \\ \hline \end{array}$$

think



Dave is three times as old as Sue.
In three years, he will be twice as old as Sue. How old are Dave and Sue now?

9. Find the sums and differences.

$$\begin{array}{r} \text{A } 35 \\ +28 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B } 72 \\ -43 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C } 68 \\ +78 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D } 39 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E } 92 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F } 67 \\ +67 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G } 95 \\ +78 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H } 60 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I } 34 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J } 78 \\ +62 \\ \hline \end{array}$$

★10. Find the sums and differences.

$$\begin{array}{r} \text{A } 345 \\ +167 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B } 6291 \\ +1963 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C } 642 \\ -285 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D } 1354 \\ -678 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E } 1876 \\ +695 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F } 3604 \\ -538 \\ \hline \end{array}$$



You are invited to explore

**ACTIVITY
CARD 8**
Page 313

Can multiplication facts help you with division facts?

First find the products in exercise 1. You can then use these facts to help you do exercise 2.

1. Find the products.

A $2 \times 7 = n$

F $4 \times 4 = n$

K $6 \times 6 = n$

P $5 \times 3 = n$

B $9 \times 2 = n$

G $7 \times 5 = n$

L $3 \times 5 = n$

Q $4 \times 7 = n$

C $5 \times 4 = n$

H $2 \times 6 = n$

M $1 \times 9 = n$

R $6 \times 0 = n$

D $6 \times 3 = n$

I $5 \times 5 = n$

N $4 \times 6 = n$

S $5 \times 8 = n$

E $8 \times 4 = n$

J $9 \times 3 = n$

O $3 \times 8 = n$

T $6 \times 5 = n$

2. Find the missing factors. Use exercise 1 to check your answers.

A $n \times 8 = 40$

I $n \times 7 = 28$

Q $n \times 3 = 15$

S $6 \times n = 18$

B $n \times 3 = 27$

J $6 \times n = 36$

R $n \times 5 = 30$

T $n \times 5 = 15$

C $4 \times n = 24$

K $8 \times n = 32$

D $6 \times n = 0$

L $n \times 9 = 9$

E $n \times 2 = 18$

M $n \times 5 = 25$

F $n \times 8 = 24$

N $5 \times n = 20$

G $4 \times n = 16$

O $n \times 5 = 35$

H $2 \times n = 14$

P $2 \times n = 12$

3. Find the quotients.

A $14 \div 2 = n$

K $18 \div 2 = n$

B $35 \div 5 = n$

L $36 \div 6 = n$

C $18 \div 6 = n$

M $40 \div 8 = n$

D $12 \div 2 = n$

N $30 \div 5 = n$

E $27 \div 3 = n$

O $28 \div 7 = n$

F $16 \div 4 = n$

P $0 \div 6 = n$

G $32 \div 8 = n$

Q $25 \div 5 = n$

H $15 \div 5 = n$

R $24 \div 8 = n$

I $24 \div 4 = n$

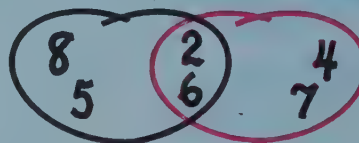
S $15 \div 3 = n$

J $9 \div 9 = n$

T $20 \div 5 = n$

think

$$\begin{array}{r} 2 \\ 6 \\ 4 \\ 7 \\ \hline 19 \end{array}$$



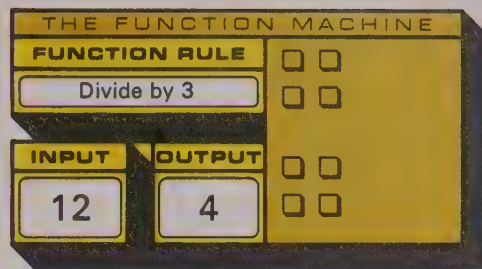
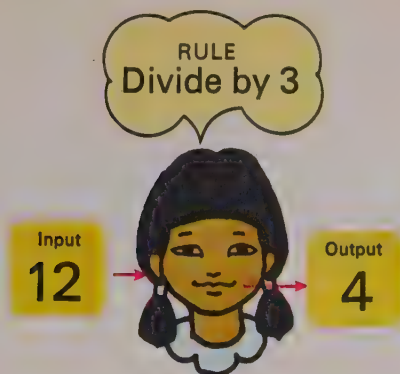
Set A

Set B

Find the sum of

1. the numbers in set A.
2. the numbers in B but not A.
3. the numbers in both A and B.
4. the numbers in A or B but not both.

Function Machine Problems



Think about the function machine and give the missing numbers.

- Function Rule**

Divide by 2

	Input	Output
	8	4
	6	3
A	10	
B	4	
C	12	
- Function Rule**

Divide by 3

	Input	Output
	6	2
A	15	
	12	4
B	9	
C	3	
- Function Rule**

Divide by 4

	Input	Output
	12	3
A	8	
B	16	
C	4	
	20	5
- Function Rule**

Divide by |||||

	Input	Output
A	5	1
B	10	
	15	3
	20	4
C	25	
- Function Rule**

Divide by 10

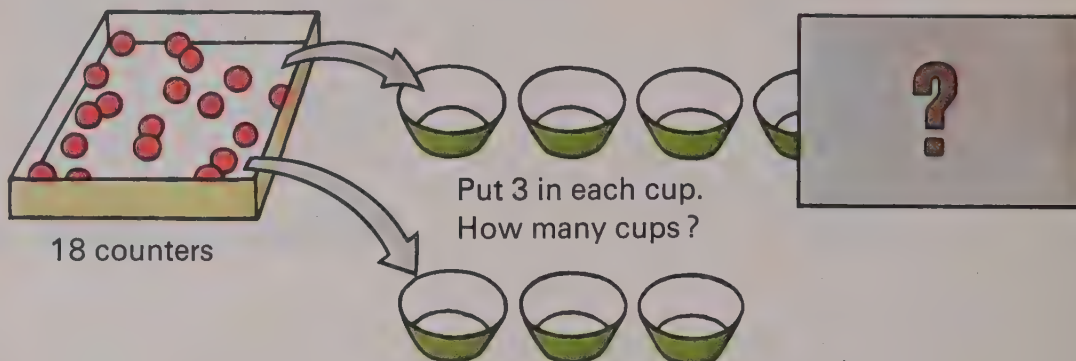
	Input	Output
	20	2
A	60	
	50	5
B	80	
C		4
- Function Rule**

Divide by 2

	Input	Output
	12	6
A		5
B		7
C		4
	16	8

Investigating the Ideas

Get some counters, paper cups, and a collection box.





18 counters

Put 3 in each cup.
How many cups?

Divide equally in 3 cups.
How many in each cup?



Can you use your counters to help you complete the chart?

Total number	Number in each cup	Number of cups	Division equation
18	3	?	$18 \div 3 = ?$
18	?	3	$18 \div 3 = ?$
18	?	6	
18	?	2	

Discussing the Ideas

1. You can use division to find **how many sets**.

Solve the equation to find out.



12 books



How many stacks of 4 can you make?



$$12 \div 4 = n$$

2. You can use division to find **how many in each set**.

Solve the equation to find out.



15 cookies



If the cookies are divided equally among 3 children, how many does each child get?



$$15 \div 3 = n$$

Using the Ideas

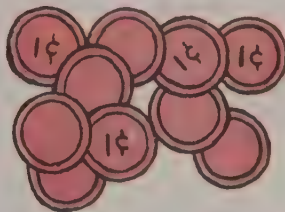
1. Write a division equation for each exercise.

A 6 apples



How many does each child get if you divide the apples equally among 3 children?

B 10 cents




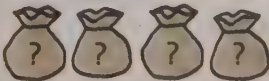

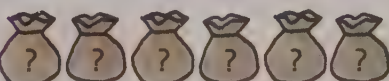
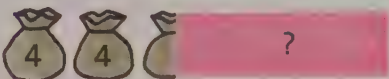
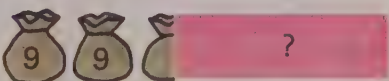
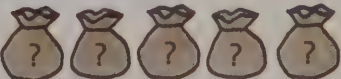
How many children can have 2 cents each?

C 8 flowers



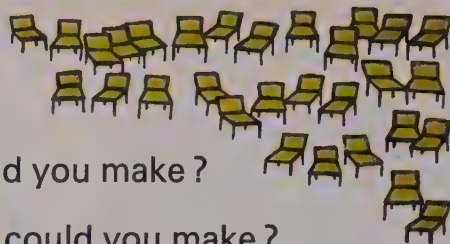
How many are in each vase if they are divided equally in 2 vases?




2. In each part, the marbles are equally divided in the bags.

A	18 marbles		How many bags?
B	16 marbles		How many in each bag?
C	24 marbles		How many bags?
D	30 marbles		How many in each bag?
E	28 marbles		How many bags?
F	27 marbles		How many bags?
G	40 marbles		How many in each bag?

Investigating the Ideas

Suppose there are
30 chairs in a room.



1. How many rows of  could you make?
2. How many rows of  could you make?
3. How many rows of  could you make?
4. How many chairs in each row if you divide them equally in ten rows?



Can you use a set of counters and show your answer to each question?

Draw pictures to show how you arranged your counters.

Discussing the Ideas

1. What division fact can you give for each of the questions above?
2. Answer the questions about the set of children.
 - A How many groups of 9 can be found?
 - B How many at each table if they are divided equally among 6 tables?
 - C How many girls are there if there are as many boys as girls?
 - D How many teams of 3 can be formed for a spelling contest?

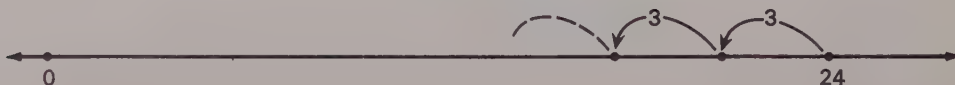


18 children


3. How long is each jump?



4. How many jumps of 3 will it take to get to 0?



Solve the picture problems.

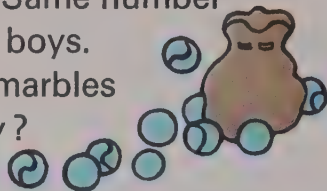
1. **IF** 6  30  **THEN** 1  ? 
2. **IF** 1  6  **THEN** ?  24 
3. **IF** 1  3  **THEN** ?  18 
4. **IF** 5  30  **THEN** 1  ? 
5. **IF** 3  24  **THEN** 1  ? 
6. **IF** 1  2  **THEN** ?  14 
7. **IF** 1  4  **THEN** ?  20 
8. **IF** 6  24  **THEN** 1  ? 



Solving Story Problems

1. Answer the question. Then write a division equation about the story.

- A** 20 marbles. Same number to each of 5 boys.
How many marbles for each boy?



- B** 15 cookies.
3 cookies to each child.
How many children get cookies?

- C** 30 cents. Apples 6 cents each.
How many apples can we buy?

- D** 24 cents spent for 3 oranges.
How much per orange?

- E** 24 people. Same number in each of 6 cars.
How many people in each car?

- F** 14 children.
Same number of girls as boys.
How many of each?

- G** 20 players for 4 teams. How many players for each team?

- H** 18 players. 3 on each team.
How many teams?

- I** 28 days. 7 days per week.
How many weeks?

- J** 16 minutes. 2 minutes per kilometre.
How many kilometres?

- K** 36 feet. 4 per dog.
How many dogs?



2. Answer the question. Then write a division equation.

- A** 12 dots.
4 in each set.
How many sets?

- B** 12 dots.
2 sets.
How many in each set?

- C** 15 dots.
3 in each set.
How many sets?

- D** 10 dots.
5 sets.
How many in each set?

- E** 15 dots.
3 sets.
How many in each set?

- F** 18 dots.
3 in each set.
How many sets?

- G** 16 dots.
4 sets.
How many in each set?

- H** 24 dots.
6 in each set.
How many sets?

- I** 24 dots. 8 sets.
How many in each set?

At the Dairy



1. Cartons of milk are put in boxes, with 6 cartons in each row.
If a box holds 24 cartons of milk, how many rows are there?
2. A machine fills 28 litre milk cartons every 4 minutes.
How many cartons does it fill in one minute?
3. Cartons of ice cream are placed in large wire racks before
they are put in the freezer. Each rack holds 48 cartons in 6 rows.
How many cartons are in each row?
4. When Susan's class went to the dairy, they went into the
pasteurizing room in groups of 6. There are 30 children
in Susan's class. How many groups of 6 did they have?
5. On the way back to school, 5 children rode in each car.
How many cars did they need?

6. Miss Smith, the teacher,
asked the children to
write a story about their
trip to the dairy. Don
decided to make up some
problems for his story.
See if you can work them.

A



How many cartons
are in each row?

B



How many cartons
are in each row?

1. Find the quotients.

- A Since $4 \times 9 = 36$, we know that $\begin{matrix} \nearrow 36 \div 9 = n. \\ \searrow 36 \div 4 = n. \end{matrix}$
- B Since $6 \times 8 = 48$, we know that $\begin{matrix} \nearrow 48 \div 8 = n. \\ \searrow 48 \div 6 = n. \end{matrix}$
- C Since $9 \times 7 = 63$, we know that $\begin{matrix} \nearrow 63 \div 9 = n. \\ \searrow 63 \div 7 = n. \end{matrix}$
- D Since $5 \times 8 = 40$, we know that $\begin{matrix} \nearrow 40 \div 5 = n. \\ \searrow 40 \div 8 = n. \end{matrix}$

2. Find the missing factors.

- A $n \times 3 = 12$ C $n \times 6 = 24$ E $n \times 3 = 15$ G $n \times 3 = 27$
 B $7 \times n = 14$ D $3 \times n = 24$ F $8 \times n = 32$ H $6 \times n = 36$

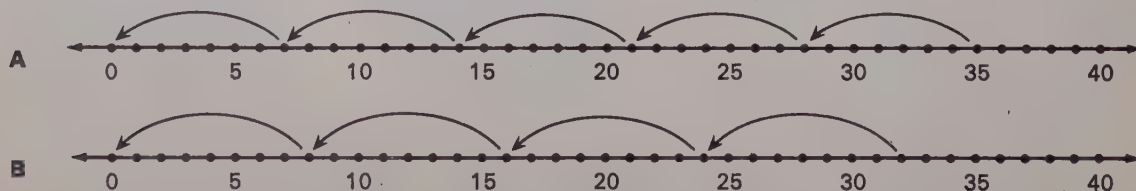
3. Find the quotients.

- A $27 \div 3 = n$ C $14 \div 7 = n$ E $12 \div 3 = n$ G $32 \div 8 = n$
 B $24 \div 3 = n$ D $24 \div 6 = n$ F $36 \div 6 = n$ H $15 \div 3 = n$

4. $\begin{array}{r} 24 \\ -3 \\ \hline 21 \end{array} \begin{array}{r} 21 \\ -3 \\ \hline 18 \end{array} \begin{array}{r} 18 \\ -3 \\ \hline 15 \end{array} \begin{array}{r} 15 \\ -3 \\ \hline 12 \end{array} \begin{array}{r} 12 \\ -3 \\ \hline 9 \end{array} \begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array} \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$

- A How many times was 3 subtracted? B How many threes are in 24?
 C Write a division equation about this.

5. Write a division equation for each number-line picture.



Short Stories

- 1** 18 dots.
3 in each column.
How many columns?



- 2** 15 children.
5 in each car.
How many cars?



- 3** 48 books. 8 shelves
(same number on each).
How many books on each shelf?

- 4** Rode bicycle 32 kilometres.
8 kilometres each hour.
How many hours?

- 6** 50 marbles. 5 sacks
(same number in each).
How many marbles
in each sack?

- 5** 14 pieces of candy in 2 hands.
Same number in each hand.
How many pieces in each hand?

- 7** 27 sails.
3 sails on each boat.
How many boats?

- 8** 36 players. 6 on each team. How many teams?



- 10** 36 pieces of pie.
6 pieces in each pie.
How many pies?

- 9** Have 35 cents.
Apples 7 cents each.
How many apples can we buy?



- 11** 6 rows of chairs. 42 chairs.
How many chairs in each row?



- 12** 28 jet plane engines.
4 engines on each plane.
How many jet planes?

1. For each pair of numbers, write the larger one on your paper.

A 84	B 807	C 8263	D 4003	E 8327
64	811	7379	4010	8309
F 43 005	G 40 040	H 60 003	I 648 356	J 260 009
43 004	40 050	60 012	647 356	260 101

2. Find the sums and differences.

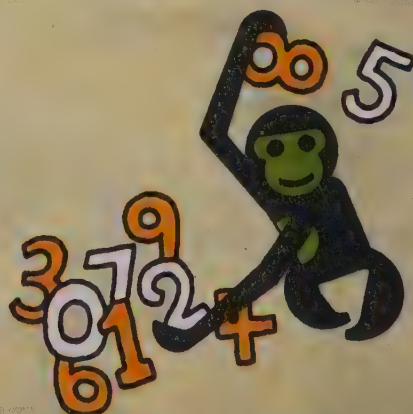
A 38 +46	B 72 -39	C 65 +43	D 39 -19	E 56 +9	F 120 -7	G 148 +32
H 74 -56	I 93 +87	J 65 -28	K 127 -68	L 88 +88	M 702 -24	N 803 -56

3. Answer T (true) or F (false).

- A $7 + 6$ is one more than $6 + 6$.
- B 7×6 is six more than 6×6 .
- C $26 + 27 > 50$
- D Ten hundreds are one thousand.
- E One hundred thousand is one million.
- F $80 \div 8 = 10$
- G $90\,000 \times 9 = 10\,000$
- H One thousand is one hundred tens.
- I $56 - 28 < 30$
- J 9×5 is nine more than 8×5 .
- ★ K 12×14 is one less than 13×13 .
- ★ L 15×15 is one more than 14×16 .
- ★ M $37 + 35 > 70$ and $48 + 54 < 100$
- ★ N $3486 + 3486 = 3485 + 3487$
- ★ O $7 + 5 < 12$ or $7 + 5 = 12$ or $7 + 5 > 12$

think

A missing factor
I cannot be
Whenever the product
Is larger than me.



WHO AM I?



4. Tell how many beads in each exercise. Pretend that the large red cans hold 1000 beads each, the gray cans hold 100 beads each, and the small red cans hold 10 beads each.



5. Find the products.

A 2×6	D 7×2	G 6×5	J 8×4	M 5×9	P 4×7
B 3×4	E 9×3	H 2×8	K 3×8	N 9×2	Q 3×6
C 4×9	F 6×6	I 5×5	L 7×3	O 5×7	R 8×5

6. No numbers are given in these exercises. You are to tell whether you would add, subtract, multiply, or divide to find each answer.

- A** John has marbles and Bill has marbles.
How many marbles do they have together?
- B** In exercise **A**, how many more marbles does John have than Bill?
- C** Mike arranged chairs in rows. How many chairs in each row?
- D** Jim has pages of stamps with stamps on each page.
How many stamps does he have on these pages?
- E** There are pieces of candy to be passed among children.
All the children get the same number of pieces.
How many pieces does each child get?



You are invited to explore

**ACTIVITY
CARD 9**
Page 313

● Can you draw parallel lines?

Investigating the Ideas

Fold a strip of _____
paper in half.



Fold it in half again. _____



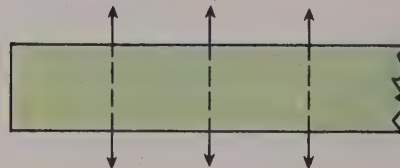
Fold it in half
a third time. _____



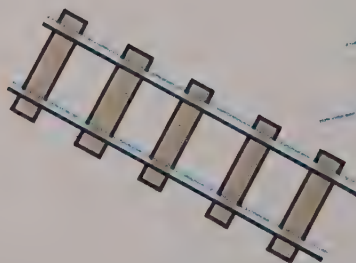
How many fold lines will you have on your strip?

Discussing the Ideas

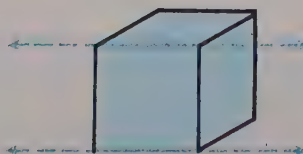
1. The fold lines on your strip suggest **parallel lines**. Can you tell what you think parallel lines are?



2. These pictures suggest parallel lines. Can you think of other things that suggest parallel lines?

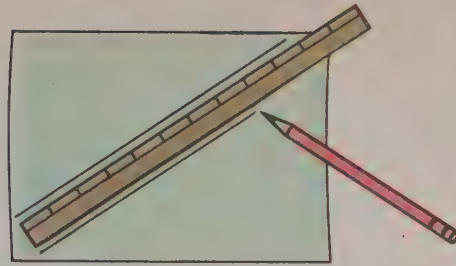


3. **Parallel segments** lie on parallel lines. Can you find some objects in your classroom that suggest parallel segments?



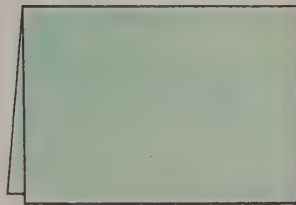
Using the Ideas

1. You can draw a pair of parallel lines by drawing on each side of your ruler.
 - A Draw two parallel lines using this method.
 - B With your ruler draw two more parallel lines that cross (intersect) the first two lines.

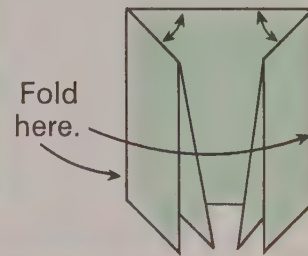


2. Make folds like these and draw along the parallel lines that are formed. Can you fold paper another way to make parallel lines?

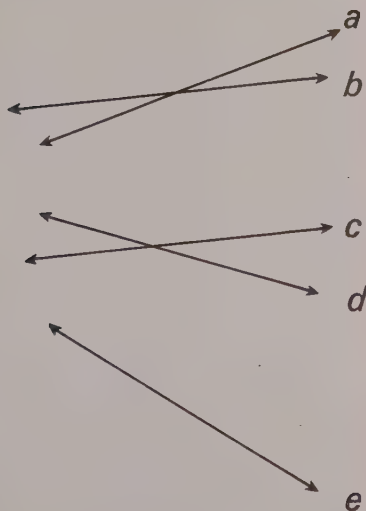
Crease carefully.



These edges must come together.

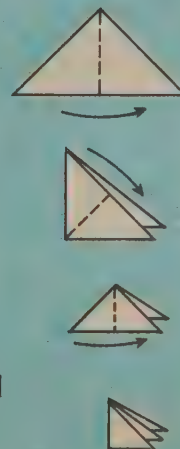


3. Name the pair of lines in the figure that seem to be parallel.



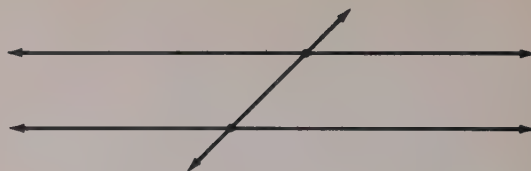
think

Suppose you draw a large right triangle with legs the same length and fold it 3 times through the middle. How many small triangles will you be able to count when you unfold it? Guess first. Then try it.



Investigating the Ideas

When a line crosses two **parallel lines**, eight angles are formed.



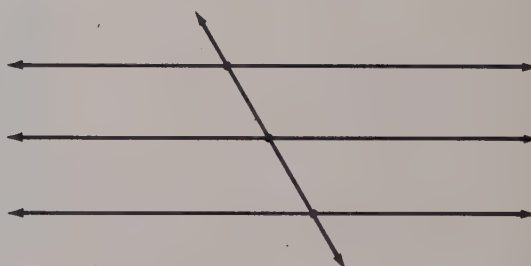
One angle is shown in red.



Can you draw a figure like this and use your crayons to color another angle?

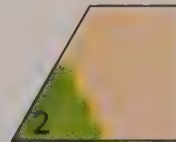
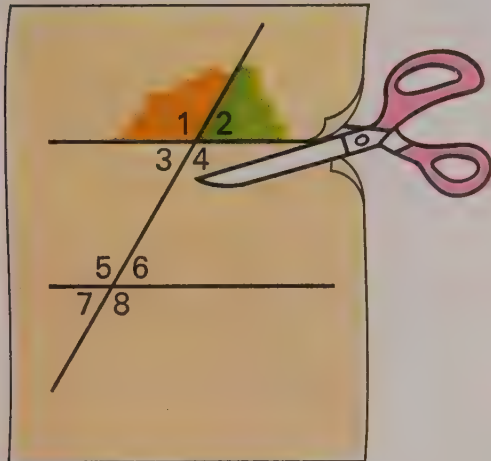
Discussing the Ideas

1. In the figure, angle 1 is shown in color. Show how you would draw and number the other seven angles.
2. The figure shows a line that crosses three parallel lines. How many angles can you find? Draw a picture and number them.
3. How many angles can you find in this figure?

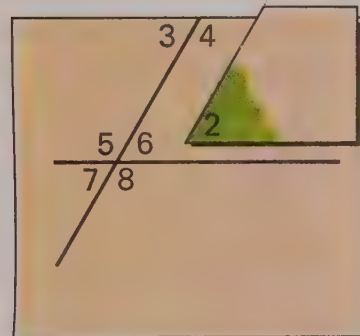


Using the Ideas

1. Draw a line that crosses two parallel lines.
Number the eight angles that are formed as shown below.
Color the insides of angles 1 and 2 and cut them out.

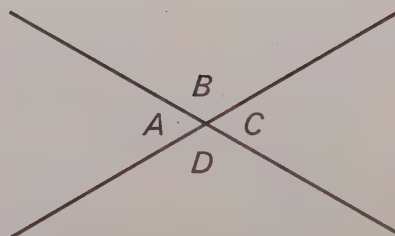


Which of the other angles (3, 4, 5, 6, 7, or 8) are the same size as angle 2? Use angle 2 to help you find out.



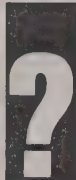
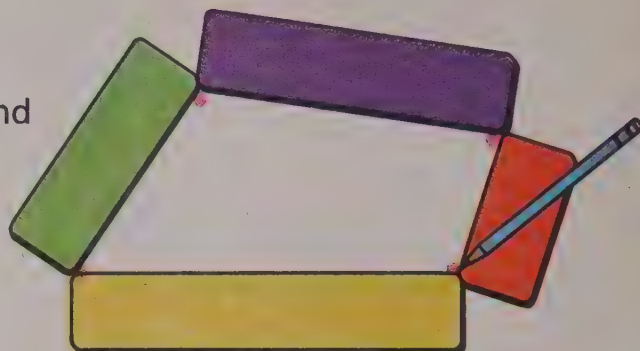
2. Which of the other angles are the same size as angle 1? Use angle 1 to help you find out.

3. Draw a pair of lines that cross each other. Letter the angles as in the figure.
 - A Which angle is the same size as angle A?
 - B Which angle is the same size as angle B?



Investigating the Ideas

These strips help you find the corners of a 4-sided figure.

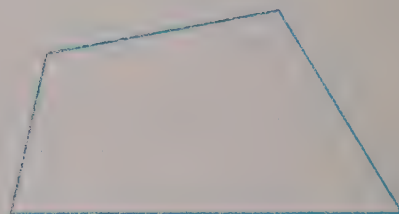


Can you make a different 4-sided figure by using this set of strips?

Record your figure by marking points at the corners and connecting them.

Discussing the Ideas

1. A closed figure like this one is called a **quadrilateral**.
 - A quadrilateral has ___? ___ line segments.
 - Can you name some objects that are in the shape of quadrilaterals?

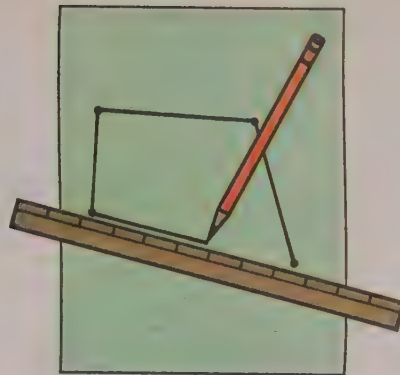


A quadrilateral

2. How many vertices does a quadrilateral have?
3. Can you mark 4 points on the chalkboard so that a quadrilateral is not formed when they are connected?
4. Can you find 4 of your strips that do not form a quadrilateral?

Using the Ideas

1. **A** Mark 4 points on your paper, as in the figure. Be sure that no 3 of them are in a line. Now use your ruler to connect the points like this. When you finish, you will have a quadrilateral.

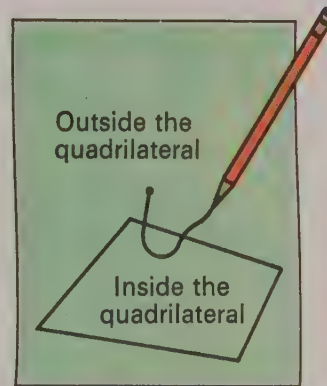


- B** Draw one segment that divides your quadrilateral into two triangles.

2. Draw a triangle. Draw one segment on this figure that divides the triangle into a smaller triangle and a quadrilateral.

3. Draw a quadrilateral. Mark a point outside the quadrilateral. From this point, draw a path that crosses the quadrilateral 4 times.

- A** Where will your pencil point be then, inside or outside?
B If the path crosses 9 times, where will it end, inside or outside?



- ★ 4. Study the chart. Then draw and name 5 different quadrilaterals.

We see a quadrilateral	We label some points	We write a name for it	We say
		$ABCD$	"quadrilateral $ABCD$ "

Investigating the Ideas

For this investigation, use these strips.

two 2-strips



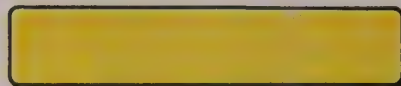
four 3-strips



one 4-strip



one 5-strip



Can you make one of the quadrilaterals described below ?

List the strips you used.

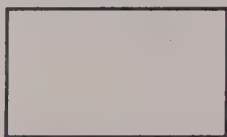
- ☐ A All four sides have the same length.
- ☐ B The two longer sides have the same length and the two shorter sides have the same length.
- ☐ C Two sides have different lengths and are parallel.
- ☐ D No two sides have the same length.

Discussing the Ideas

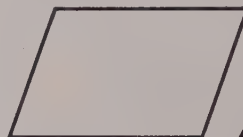
Special Quadrilaterals



square



rectangle



parallelogram



rhombus



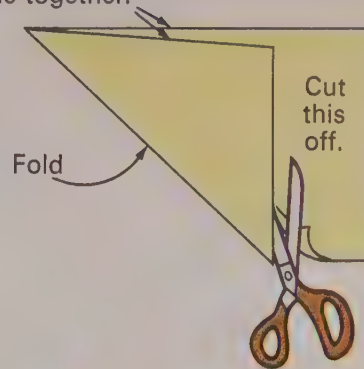
trapezoid

1. Which of the special quadrilaterals shown did you make in the Investigation ?
2. In what ways are squares and rectangles alike ? In what way are they different ? Compare other figures in this way.

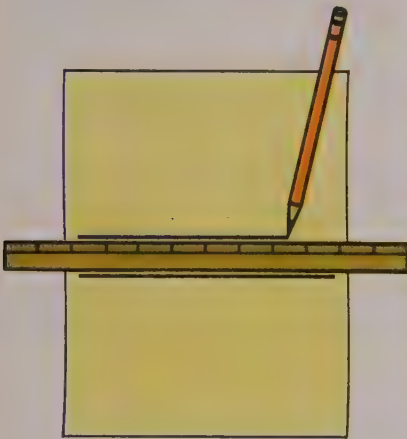
Using the Ideas

These edges must come together.

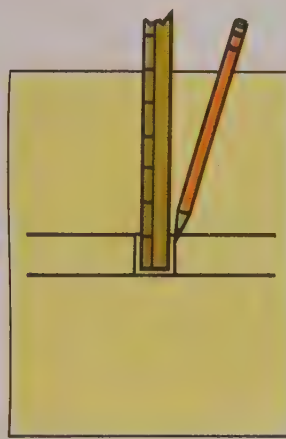
1. **A** What kind of figure is suggested by a sheet of tablet paper?
- B** Use the method suggested in the picture to cut a square from tablet paper.



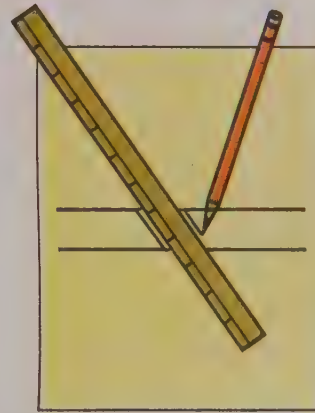
2. Study these pictures. Then use your ruler to draw a square and a rhombus.



Draw a line along each side of your ruler.



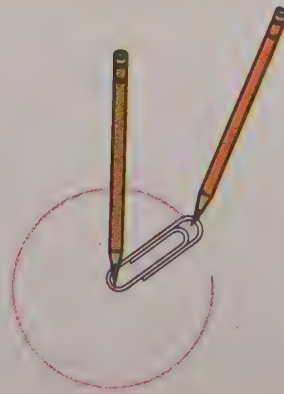
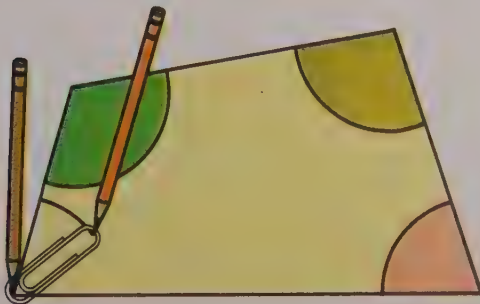
Draw like this to form a **square**.



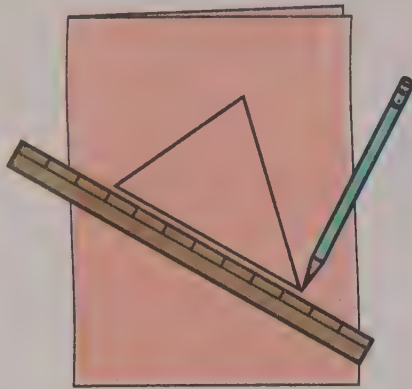
Draw like this to form a **rhombus**.

Can you use your ruler like this to draw a rectangle and a parallelogram?

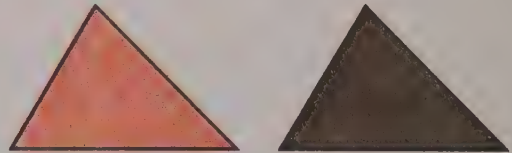
- ★ 3. How much of a circle can you fill with the corners of a quadrilateral?



Investigating the Ideas



Draw a triangle on a piece of folded paper.



Cut the folded paper to get two triangles that are just alike. Color them different colors.

?

How many different quadrilaterals can you make by placing sides of your triangles together?

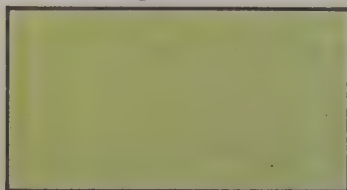
Discussing the Ideas

1. How many parallelograms did you find in the Investigation?

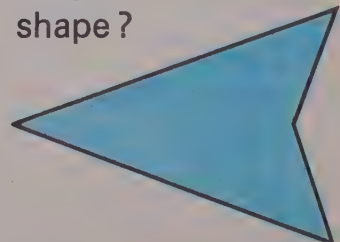
2. Jack made these two shapes with his triangles. Which one is a parallelogram?



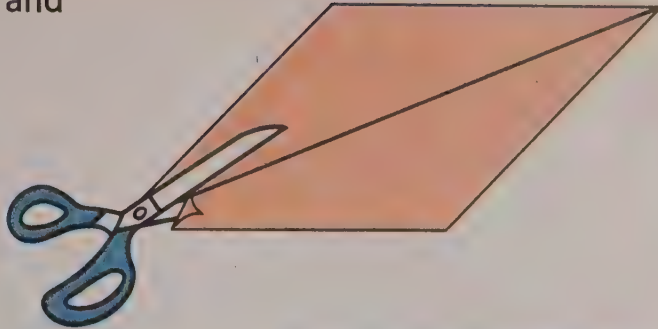
3. Can you cut out two triangles that are just alike and form a rectangle?



4. Could two triangles that are just alike form this shape?



1. Draw a parallelogram and cut it out. Then cut it into two triangles. Do they fit exactly upon each other?



2. Draw a large 4-sided figure on your paper.

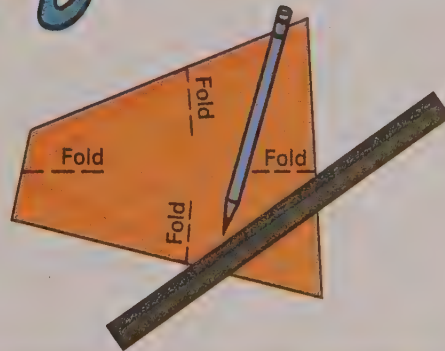
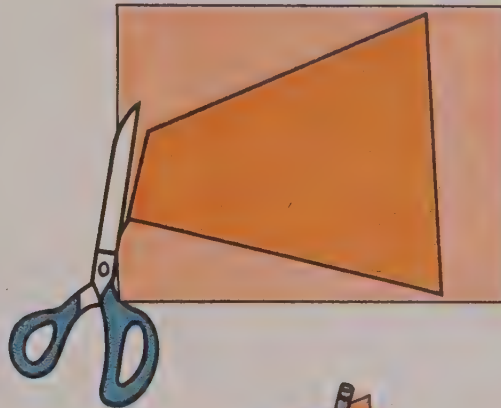
A Color it and then cut it out.

B Find the midpoint of each side by folding.

C Connect the midpoints with segments as in the figure.

D What kind of a figure do you think you have?

E Do you think this would work if you started over with a different 4-sided figure?

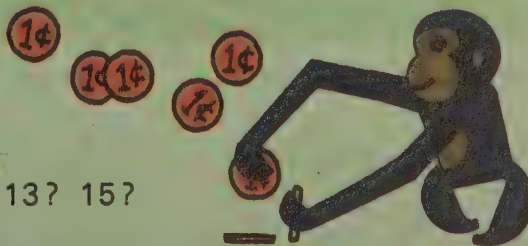


think

How many pennies does it take to make a stack as high as a penny standing on edge?

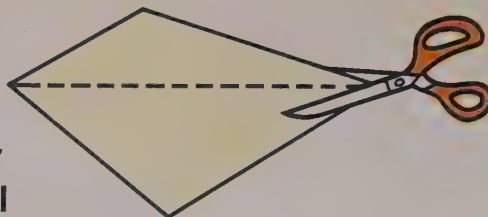
5? 6? 7? 8? 9? 10? 11? 13? 15?

Guess. Then check your guess.



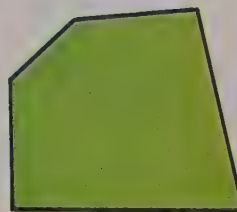
Investigating the Ideas

You can separate any quadrilateral region into two triangular regions by cutting along a **diagonal** (corner to corner).

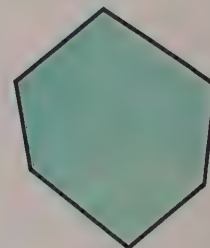


quadrilateral

Draw a **pentagon** (5-sided polygon) and a **hexagon** (6-sided polygon) and cut them out.



pentagon



hexagon



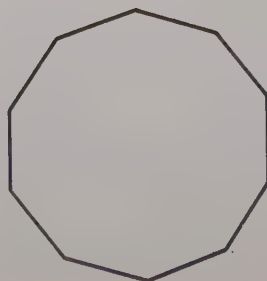
Can you find how many triangles are formed by cutting along the diagonals from one corner of a pentagon? of a hexagon?

Discussing the Ideas

1. Can you explain how to complete the table?

Number of sides of polygon	Number of triangles formed
3	1
4	2
5	
6	
7	

2.



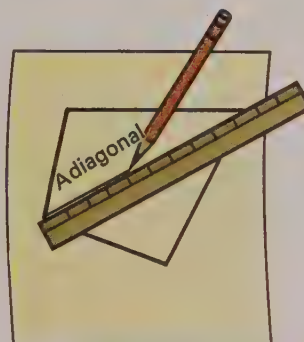
This polygon has ten sides and is called a **decagon**. Into how many triangles can it be separated by cutting along the diagonals from one corner?

1. **Regular polygons** have all sides and all angles the same.
Copy and complete the table for the regular polygons shown.

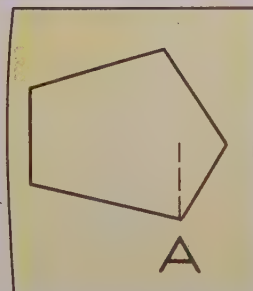


Name of polygon	Number of sides	Number of angles	Any sides parallel ?
Regular triangle (equilateral)			
Regular quadrilateral (square)			
Regular pentagon			
Regular hexagon			

2. Draw a **quadrilateral** on your paper.
- Draw all the **diagonals**.
 - How many diagonals are there ?
 - How many are there from each vertex ?



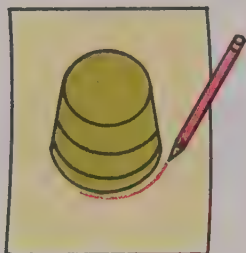
3. Draw a **pentagon** on your paper. Choose one vertex and label it **A**.
- How many diagonals can you draw from **A** ?
 - Can you draw the same number of diagonals from any vertex ?



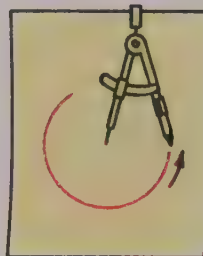
- ★ 4. Give the total number of diagonals that can be drawn for each figure.
- pentagon
 - hexagon
 - a 10-sided polygon

Investigating the Ideas

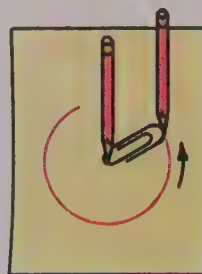
Here are four ways to draw a circle.



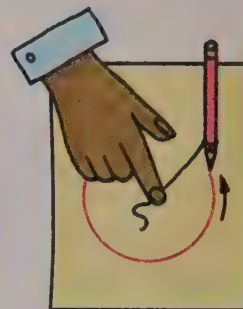
Drawing around a cup or a can



Using a compass



Using a paper clip



Using a string



Can you use each of these methods to make a circle? Which method was easiest for you?

Discussing the Ideas

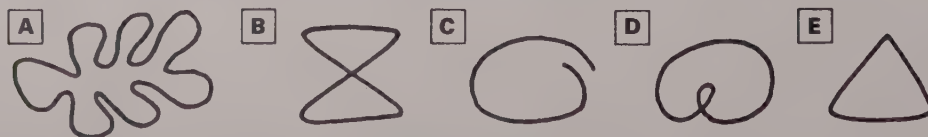
1. Each of these is a **simple closed curve**.



None of these is a **simple closed curve**.

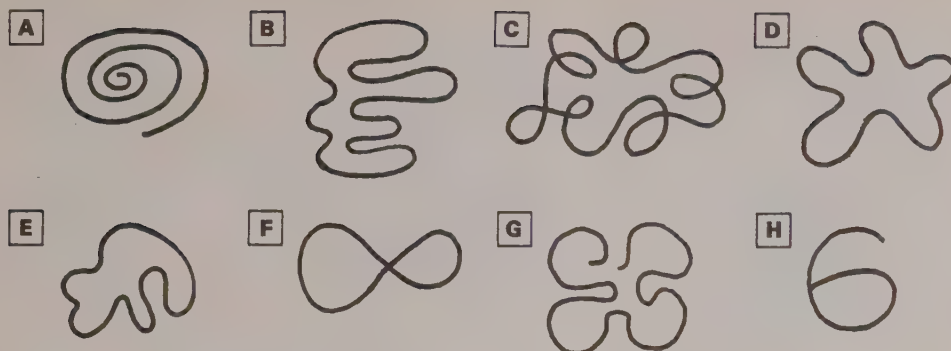


Which of these are **simple closed curves**?



2. How can you tell whether or not a figure is a **simple closed curve**?

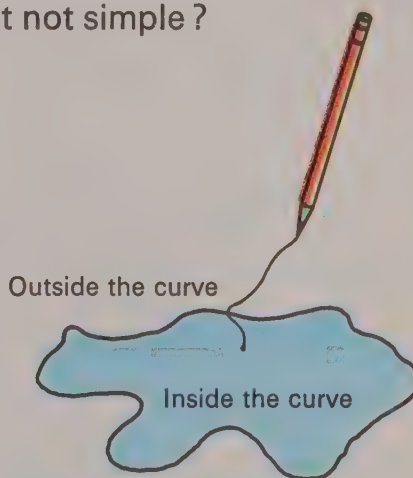
1.



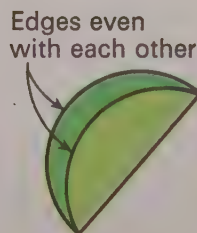
- A Which curves above are closed ?
- B Which curves above are simple closed curves ?
- C Which curves above are closed but not simple ?

2. Draw a simple closed curve.
Mark a point inside the curve.

- A Start at the point and draw a path that crosses the curve. Where is your pencil point now, inside or outside ?
- B If you cross 5 times in all, where are you ? 6 times ?

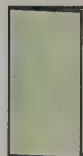


- 3. A Draw a circle and cut it out.
- B Find the **centre** of the circle like this:
 - ▲ Fold the circle as shown here.
 - ▲ Open it and fold it again as shown but in a different place.
- C Where is the centre of the circle ?



Investigating the Ideas

This square is folded so that one half exactly matches the other half.

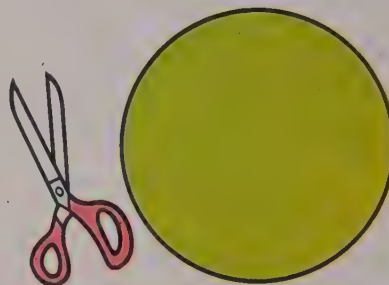


How many different ways can you fold a square so that one half exactly matches the other?

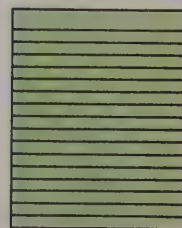
Discussing the Ideas

1. A square is **symmetrical** because you can fold it so that one half exactly matches the other half.
Are there other symmetrical figures?

2. Draw a circle and cut it out.
Can you fold it so that the halves match? Can you do this in more than one way?



3. A sheet of tablet paper forms a rectangle. Can you fold it to form matching halves?
Can you do this in more than one way?



Using the Ideas

1. Here is a way to make a symmetrical figure.



Fold a piece of paper.



Make a cut that starts and ends on the fold.



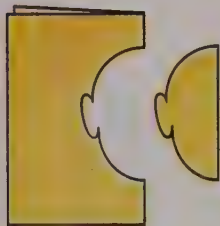
Unfold the piece you cut out. It will be symmetrical.

Make cuts so that the unfolded shape will look like

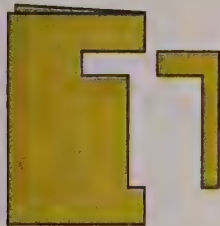
- A a rectangle. C a triangle. E a house. G a rocket.
B a leaf. D a square. F a pumpkin. H a hexagon.

2. Draw a picture to show what each cut-out piece below will look like when unfolded.

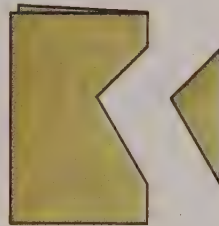
A



B



C



3. Write **S** (symmetrical) or **NS** (not symmetrical) for each figure. If it is symmetrical, think about how you would fold it to make the halves match.

A



B



C



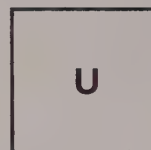
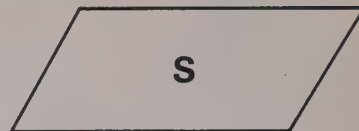
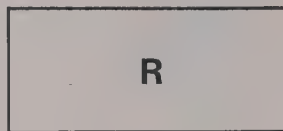
D



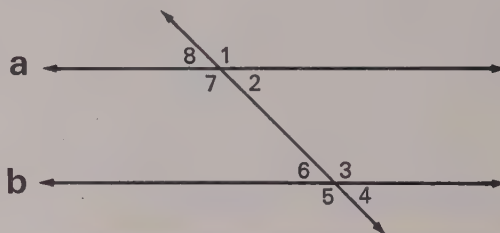
Reviewing the Ideas

1. Give the letter of the figure that matches each name.

- A square
- B parallelogram
- C rectangle
- D trapezoid



2. Lines **a** and **b** are parallel. Name all of the angles in the figure that are the same size as angle 2.



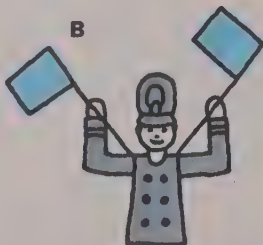
3. Draw a quadrilateral on your paper. Draw the diagonals of the quadrilateral.

4. Which of these shapes are symmetrical?

A



B



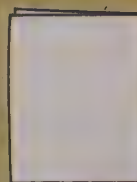
C



D

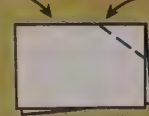


think



Second fold

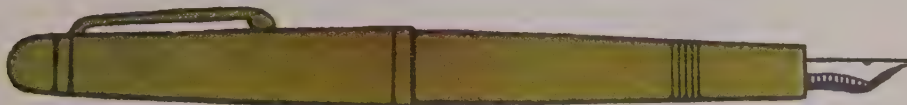
First fold



Fold a piece of paper twice and cut off the corner as shown. Guess what the cut-off piece will look like when unfolded and draw a picture. Then unfold it and check your guess.

1. Measure each object to the nearest $\frac{1}{2}$ centimetre.

A



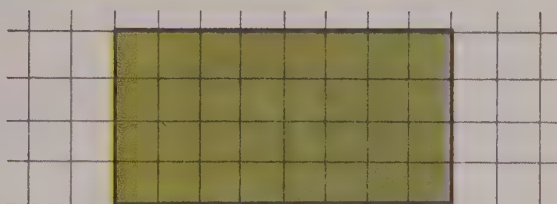
B



2. A Find the area of the rectangular region.

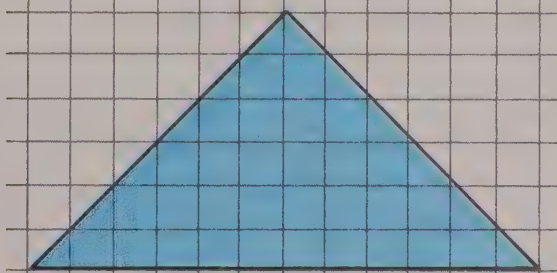
- B What is the area of half the rectangle?

- C What is the area of $\frac{1}{4}$ the rectangle?



3. A Find the area of the triangular region.

- B What is the area of half this region?



4. Solve the equations.

A $56 = 40 + n$

C $41 = n + 11$

E $84 = n + 14$

B $72 = 60 + n$

D $90 = 80 + n$

F $76 = n + 16$

5. Find the sums and differences.

A $\begin{array}{r} 24 \\ +31 \\ \hline \end{array}$

B $\begin{array}{r} 78 \\ -46 \\ \hline \end{array}$

C $\begin{array}{r} 35 \\ +48 \\ \hline \end{array}$

D $\begin{array}{r} 73 \\ -26 \\ \hline \end{array}$

E $\begin{array}{r} 84 \\ +78 \\ \hline \end{array}$

F $\begin{array}{r} 121 \\ -75 \\ \hline \end{array}$

G $\begin{array}{r} 362 \\ +475 \\ \hline \end{array}$

H $\begin{array}{r} 284 \\ -166 \\ \hline \end{array}$

I $\begin{array}{r} 375 \\ +468 \\ \hline \end{array}$

J $\begin{array}{r} 721 \\ -145 \\ \hline \end{array}$



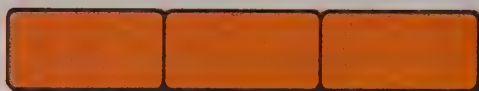
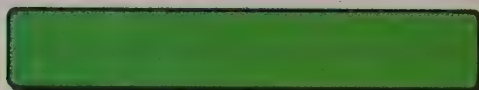
You are invited to explore

ACTIVITY
CARD 10
Page 314

● *What are odd and even numbers?*

Investigating the Ideas

You can match the 6-strip with a "train" of 2-strips.



Which of the other strips can be matched with a train of 2-strips?

Discussing the Ideas

The numbers whose strips can be matched with a train of 2-strips are called **even numbers**.

Zero is also an even number.


The other numbers are called **odd numbers**.

1. **A** Name the even numbers less than 50.
B Name the odd numbers between 50 and 100.
2. Every odd-numbered strip can be matched with a train of 2-strips and how many extra 1-strips?
3. Can you think of an easy way to decide whether a number is even or odd?


1. Give the function rules and the missing numbers.



A

Input 6 → Output 12

Rule: 



THE FUNCTION MACHINE

FUNCTION RULE: 

INPUT:  OUTPUT: 

Any whole number → An even number

Function Rule


Input	Output
1	2
2	4
3	6
4	8
7	
9	

B


C



D

Input 6 → Output 13

Rule: 



THE FUNCTION MACHINE

FUNCTION RULE: 

INPUT:  OUTPUT: 

Any whole number → An odd number

Function Rule

Input	Output
1	3
2	5
3	7
4	9
7	
9	

E

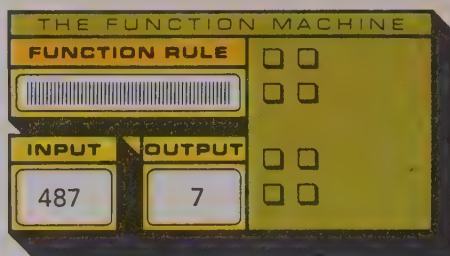
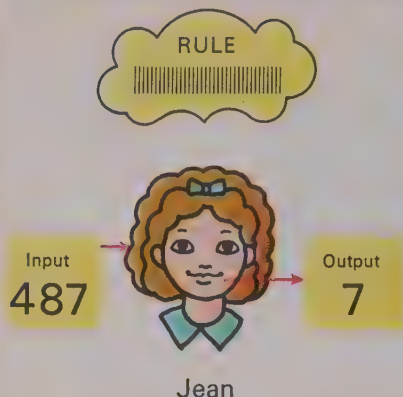
F

2. Complete a table like this one for these numbers: 34, 35, 47, 48, 60, 61.

Number	Equation	Odd or Even
24	$24 = 12 + 12$	Even
25	$25 = 12 + 13$	Odd

● What are some patterns of odd and even numbers?

Investigating the Ideas



Function Rule



Input Output

19 9

20 0

76 6

A 45

B 960

C 871

D 408



Can you find Jean's function rule and use it to complete the table?

Discussing the Ideas

1. Can you tell whether a number is even or odd if you know only the last digit of the numeral?

2. Study the examples. Then complete the exercises.

Examples: 57 ends with 7. 57 is an odd number.

86 ends with 6. 86 is an even number.

A 34 ends with 4. Is 34 an even or an odd number?

B 43 ends with 3. Is 43 an even or an odd number?

C 30 ends with 0. Is 30 an even or an odd number?

D 138 ends with 8. Is 138 an even or an odd number?

E 469 ends with 9. Is 469 an even or an odd number?

3. Is the number for this 3-digit numeral odd or even?

4. Answer "even" or "odd."

A Each ___? ___ number ends with 0, 2, 4, 6, or 8.

B Each ___? ___ number ends with 1, 3, 5, 7, or 9.



1. Find the sums or products. Then tell whether "even" or "odd" should go in the blank.

A $\begin{array}{r} 6 \\ +8 \\ \hline \end{array}$ $\begin{array}{r} 16 \\ +28 \\ \hline \end{array}$ $\begin{array}{r} 60 \\ +78 \\ \hline \end{array}$ $\begin{array}{r} 78 \\ +54 \\ \hline \end{array}$

The sum of two even numbers is an ___? ___ number.

B $\begin{array}{r} 5 \\ +7 \\ \hline \end{array}$ $\begin{array}{r} 15 \\ +1 \\ \hline \end{array}$ $\begin{array}{r} 37 \\ +45 \\ \hline \end{array}$ $\begin{array}{r} 65 \\ +87 \\ \hline \end{array}$

The sum of two odd numbers is an ___? ___ number.

C $\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$ $\begin{array}{r} 47 \\ +6 \\ \hline \end{array}$ $\begin{array}{r} 38 \\ +11 \\ \hline \end{array}$ $\begin{array}{r} 57 \\ +38 \\ \hline \end{array}$

The sum of an even and an odd number is an ___? ___ number.

D $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$

The product of two even numbers is an ___? ___ number.

E $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$

The product of two odd numbers is an ___? ___ number.

F $\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$

The product of an even and an odd number is an ___? ___ number.

2. Answer "even" or "odd."

- A The sum of an even number and 1 is an ___? ___ number.
 B The sum of an odd number and 1 is an ___? ___ number.
 C The product of an odd number and 1 is an ___? ___ number.
 D No ___? ___ number is less than 1.
 E Every ___? ___ number is greater than 0.
 F There are two ___? ___ numbers less than 3.
 G There is only one ___? ___ number less than 3.
 H The product of 0 and an odd number is an ___? ___ number.
 I The sum of an even number and 0 is an ___? ___ number.
 J The product of an even number and 0 is an ___? ___ number.
 K The sum of two odd numbers is an ___? ___ number.
 L The product of two odd numbers is an ___? ___ number.
 M The sum of an even and an odd number is an ___? ___ number.
 N The product of an even and an odd number is an ___? ___ number.



Discussing the Ideas

	×	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28
B	3	0	3	6	9	12	15	18	21	24	27	30	33	36	39	42
C	4	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56

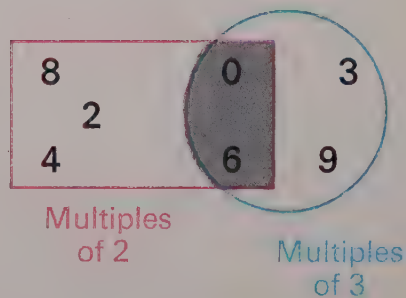
The numbers in row **A**, $\{0, 2, 4, 6, \dots\}$, are multiples of 2.

The numbers in row **B**, $\{0, 3, 6, 9, \dots\}$, are multiples of 3.

The numbers in row **C**, $\{0, 4, 8, 12, \dots\}$, are multiples of 4.

1. Give a multiple of 2 not shown in the table. How does the diagram above suggest another way to describe the even numbers?
2. Give a multiple of 3 not shown in the table. Use the table to count by threes to 39.
3. Find a number in the table (other than 0) that is a multiple of 3 and a multiple of 4. Find another such number.
4. Why would 18 be in the list of multiples of 6?

- ★ 5. The rectangle contains **only** multiples of 2. The circle contains **only** multiples of 3. Can you explain how to find some more numbers for the shaded space?



1. List the multiples

- A of 5 up to 50.
- B of 6 up to 60.
- C of 7 up to 70.
- D of 8 up to 80.
- E of 9 up to 90.
- F of 10 up to 100.

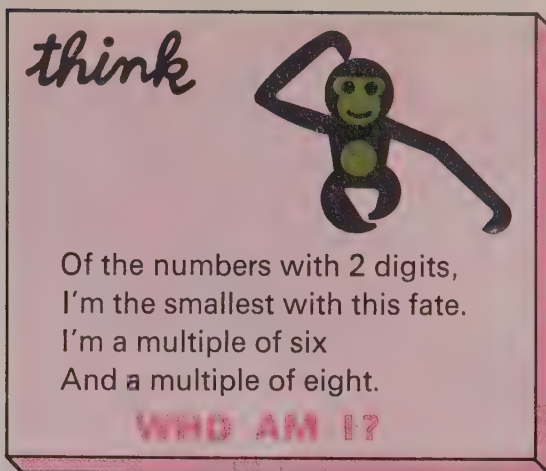
2. Find the missing numbers.

- A 8 is a multiple of 2.
8 is also a multiple of |||| .
- B 6 is a multiple of both |||| and |||| .
- C Since $3 \times 4 = 12$, 12 is a multiple of both 3 and |||| .
- D Since $5 \times 6 = 30$, 30 is a multiple of both |||| and 6.
- E Since $7 \times 8 = 56$, 56 is a multiple of both |||| and |||| .

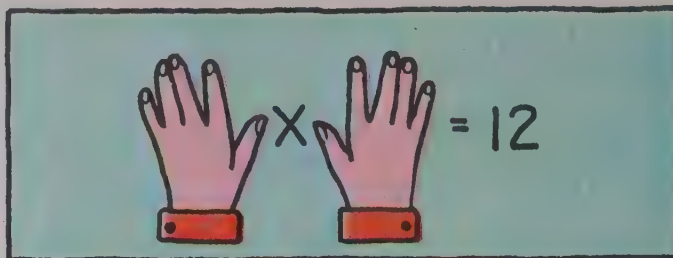
- 3. A In the table on page 218, find a number (other than 0) that is a multiple of 2, 3, and 4.
- B Find another multiple of 2, 3, and 4.
- C Find a number less than 50 that is a multiple of 2, 4, 5, 8, and 10.

- ★ 4. Write the numbers 1 through 100 in rows as shown. Circle the multiples of 5. What pattern do you see? Mark the multiples of another number. Is there a pattern? Mark multiples of other numbers to show as many patterns as you can.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	...								
:									
:									
:									



Investigating the Ideas



Can you record all the different equations that might be hidden?

Discussing the Ideas

1. Study this diagram.

$$3 \times 4 = 12$$

Since the product of 4 and 3 is 12, we say
4 is a factor of 12 and
3 is a factor of 12.

What are some other factors of 12?

2. Kevin is covering up two factors of 20.

- A Can you be certain about what these factors are?
- B Give a pair of numbers that Kevin might be hiding.
- C Write three equations, using different factors that might be on the board.
- D List six numbers that are factors of 20.
- E Is 7 a factor of 20? Why?

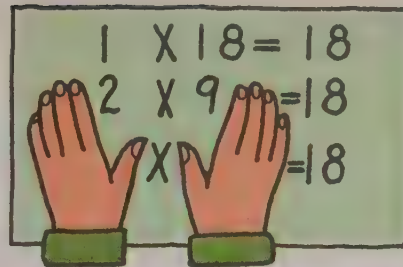


Using the Ideas

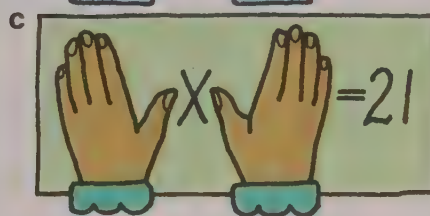
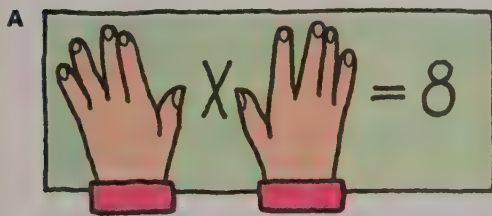
- A** Write a third equation to show other factors of 18.

B List six different factors of 18.

C Is 4 a factor of 18?



- For each exercise, write as many equations as you need to show all the factors of the product.



- List all the factors of each number. Use exercise 2 if you need help.

A 8 **B** 15 **C** 21

- A** Which of the numbers 3, 4, 5 is a factor of 16?

B Which equation can you solve?

1 $16 \div 3 = n$

2 $16 \div 4 = n$

3 $16 \div 5 = n$

- ★ **5.** Which of the numbers 2, 3, 4, 5, 6 are factors of:

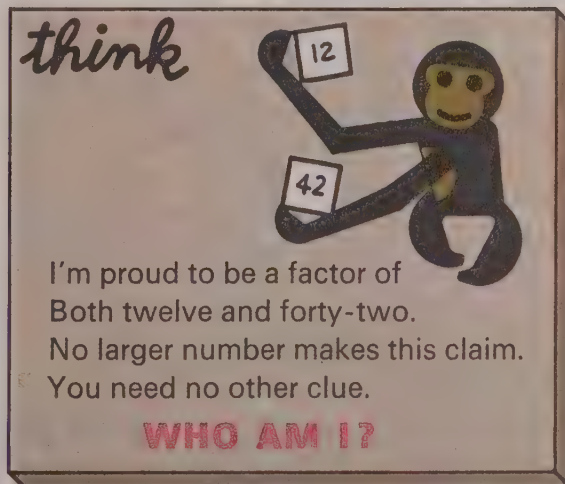
A 15? (Answer: 3 and 5)

B 10? **F** 30?

C 20? **G** 31?

D 24? **H** 32?

E 28? **I** 60?



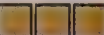







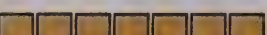






Investigating the Ideas

The figures show which numbers from 2 through 8 can be shown as rectangles using sets of squares. No single strings of squares are allowed!

Sets of Squares

Rectangle?

2			No
3			No
4			Yes
5			No
6			Yes
7			No
8			Yes
9		→ ?	



Can you use sets of squares to find which numbers from 9 through 20 will form rectangles?

Record your findings on graph paper.

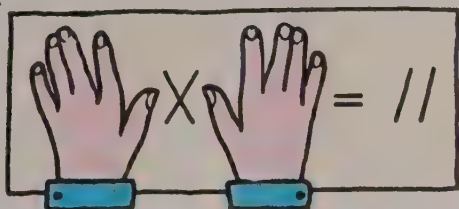
Discussing the Ideas

- The numbers greater than 1 that do not make "rectangles" are called **prime numbers**.
 - Which numbers from 2 through 8 are prime numbers?
 - What prime numbers did you find from 9 through 20?
- Which numbers between 20 and 30 do you think are prime numbers?
- The number 39 is the product of 3 and 13. How could you use this fact to convince someone that 39 is not a prime number?

Using the Ideas

1. The product in each exercise is a prime number. Write as many equations as you need to show all the factors of the product.

A



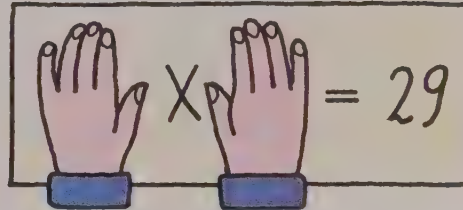
B



C



D



2. A How many factors did each prime number in exercise 1 have?
B Can you find a prime number with more than two factors?

3. Write an equation for each exercise.

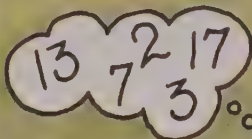
Example: I know 20 is **not prime** because
 $4 \times 5 = 20$.

A I know 32 is **not prime** because $4 \times 8 = 32$.

B I know 33 is **not prime** because $3 \times 11 = 33$.

4. List the prime numbers between 40 and 50.

think



Now I'm a strange prime number.
No others are like me.
All my cousins are so odd,
As odd, as odd can be.

WHO AM I?



1. Which numbers are even and which are odd?

- A 6 B 9 C 5 D 12 E 32 F 31 G 146 H 283

2. Find the missing numbers.

- A 14 is a multiple of 2 because $2 \times 7 = n$.
 B 12 is a multiple of 3 because $n \times 4 = 12$.
 C Since $4 \times 6 = 24$, we call $\square\square\square\square$ a multiple of 4.
 D Since $n \times 12 = 36$, we call 36 a multiple of 3.
 E Since $5 \times 6 = 30$, we know that $\square\square\square$ is a multiple of 5.
 F 45 is a multiple of 5 since $5 \times 9 = n$.

3. Find the missing numbers.

- A $\square\square\square$ and $\square\square\square$ are factors of 18 because $3 \times 6 = 18$.
 B 2 and 9 are factors of $\square\square\square$ because $2 \times n = 18$.
 C Since $4 \times 5 = 20$, $\square\square\square$ and $\square\square\square$ are factors of 20.
 D Since $2 \times 3 \times 4 = 24$, 2, 3, and 4 are factors of $\square\square\square$.
 E Since $21 \div 3 = 7$, $\square\square\square$ and $\square\square\square$ are factors of 21.

4. List the factors of the following numbers.

- A 6 B 5 C 9 D 10 E 11 F 12 G 20 H 29

★ 5. Give the digits.

- A If a number is a multiple of 2, then it ends in one of the digits $\square\square\square$, $\square\square\square$, $\square\square\square$, $\square\square\square$, or $\square\square\square$.
 B If a number is a multiple of 5, then it ends in one of the digits $\square\square\square$ or $\square\square\square$.
 C The multiples of 3 may end in any one of the digits 0 to 9. Show this by listing the first ten multiples of 3.
 D What other numbers between 1 and 10 have multiples that may end in any one of the digits 0 to 9?

1. Solve the equations.

A $84 = 80 + n$ B $384 = 300 + 80 + n$ C $58 = n + 8$
D $458 = n + 50 + 8$ E $763 = 700 + n + 3$





2. Find the sums and differences.

A $\begin{array}{r} 24 \\ +35 \\ \hline \end{array}$	B $\begin{array}{r} 78 \\ -26 \\ \hline \end{array}$	C $\begin{array}{r} 42 \\ +30 \\ \hline \end{array}$	D $\begin{array}{r} 79 \\ -20 \\ \hline \end{array}$	E $\begin{array}{r} 65 \\ +18 \\ \hline \end{array}$	F $\begin{array}{r} 94 \\ -56 \\ \hline \end{array}$
G $\begin{array}{r} 38 \\ +27 \\ \hline \end{array}$	H $\begin{array}{r} 54 \\ -19 \\ \hline \end{array}$	I $\begin{array}{r} 76 \\ +88 \\ \hline \end{array}$	J $\begin{array}{r} 134 \\ -75 \\ \hline \end{array}$	K $\begin{array}{r} 84 \\ +16 \\ \hline \end{array}$	L $\begin{array}{r} 100 \\ -23 \\ \hline \end{array}$

3. Solve the equations.

A $7 + n = 15$ B $16 - 9 = n$ C $13 - 7 = n$
D $n + 5 = 12$ E $10 - 4 = n$ F $6 + n = 14$

4. Give the sign $>$, $<$, or $=$ for each

A 482  472 B 6286  6296 C $50 + 8$  $50 - 8$
D $70 - 2$  $70 - 3$ E $70 + 4$  $70 + 5$ F $80 + 0$  $80 - 0$

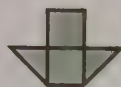
5. Find the area of each region.

6. Find the volume of each region.

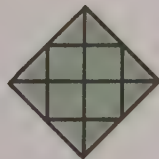
A



B



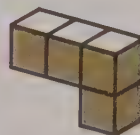
C



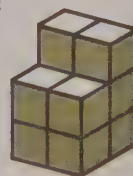
A



B



C

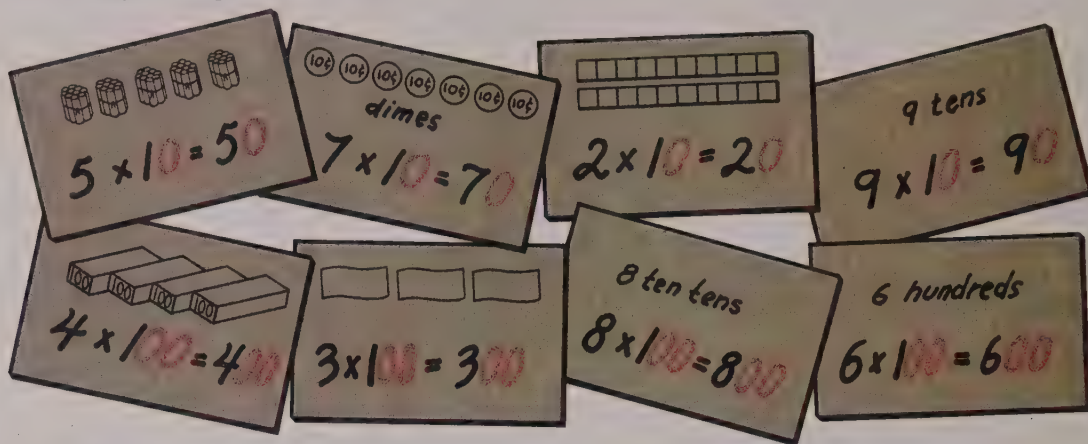


You are invited to explore

**ACTIVITY
CARD 11**
Page 314

Is there an easy rule for multiplying by 10 and 100?

Investigating the Ideas



Can you give a rule for multiplying by 10? by 100?

Discussing the Ideas

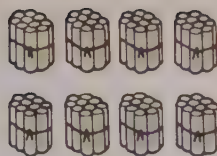
1. **A** How many sets of 10 are in figure A?
B Write the numeral for 6 tens.
C Solve: $6 \times 10 = n$
2. **A** How many sets of 100 are in figure B?
B Write the numeral for 3 hundreds.
C Solve: $3 \times 100 = n$



3. **A** Explain your rule for multiplying a 1-digit number by 10.
B Explain your rule for multiplying a 1-digit number by 100.

Using the Ideas

1. **A** How many tens?
B Write the numeral for this number of tens.
C Solve: $8 \times 10 = n$



2. **A** How many hundreds?
B Write the numeral for this number of hundreds.
C Solve: $2 \times 100 = n$



3. Find the products.

A 5×10	E 8×100	I 9×100	M 3×100
B 7×100	F 9×10	J 7×10	N 6×10
C 2×10	G 4×10	K 8×10	O 1×100
D 4×100	H 5×100	L 2×100	P 6×100

4. Solve the equations.

A $6 \times 10 = n$	F $n \times 10 = 50$	K $4 \times n = 40$
B $3 \times 10 = n$	G $n \times 100 = 300$	L $6 \times n = 600$
C $4 \times 100 = n$	H $n \times 10 = 40$	M $7 \times n = 70$
D $7 \times 10 = n$	I $n \times 100 = 600$	N $3 \times n = 300$
E $9 \times 100 = n$	J $n \times 100 = 800$	O $2 \times n = 200$

think


Study the pattern.
 Then copy the equations,
 giving the missing numbers.

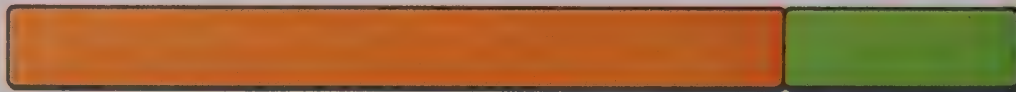
$$\begin{array}{l}
 1 \times 9 = 10 - 1 \\
 2 \times 9 = 20 - 2 \\
 3 \times 9 = 30 - 3 \\
 4 \times 9 = 40 - 4 \\
 5 \times 9 = \text{||||} - \text{||||} \\
 8 \times 9 = \text{||||} - \text{||||} \\
 13 \times 9 = \text{||||} - \text{||||}
 \end{array}$$



● Does the “10 rule” work for products like 23×10 ?

Investigating the Ideas

If your white strip () is 1, how long is this train?



If your white strip were 10, how long would this train be?



Can you show 240 with your strips if you think of your white strip as 10?

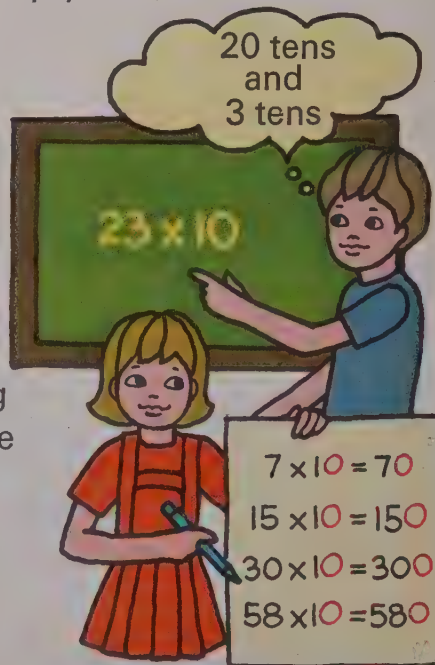
Discussing the Ideas

1. Explain how you can use strips to help you think of 14×10 .

2. **A** Explain how Jack is thinking about 23×10 .
B Write the numeral for 20 tens.
C Write the numeral for 3 tens.
D Solve: 23×10

3. Jill knows a shortcut for multiplying by ten. She made a chart to help the other children discover her rule.

- A** What is Jill’s rule for multiplying by 10?
B What is a simple rule for multiplying by 100?



1. Find the value in cents for each set of dimes.



2. Give the value in cents for each coin collection.

A 5 dimes C 20 dimes E 27 dimes G 52 dimes I 56 dimes

B 10 dimes D 15 dimes F 40 dimes H 91 dimes J 48 dimes

3. Solve the equations.

A $(40 \times 10) + (3 \times 10) = n$ D $(60 \times 10) + (5 \times 10) = n$

$43 \times 10 = n$

$65 \times 10 = n$

B $(70 \times 10) + (2 \times 10) = n$ E $(20 \times 10) + (9 \times 10) = n$

$72 \times 10 = n$

$29 \times 10 = n$

C $(30 \times 10) + (1 \times 10) = n$ F $(50 \times 10) + (6 \times 10) = n$

$31 \times 10 = n$

$56 \times 10 = n$

4. Find the products.

A $10 \times 10 = n$

B $27 \times 10 = n$

C $10 \times 43 = n$

D $50 \times 10 = n$

E $10 \times 19 = n$

F $96 \times 10 = n$

G $10 \times 73 = n$

H $10 \times 65 = n$

I $34 \times 10 = n$

J $80 \times 10 = n$

K $8 \times 100 = n$

L $52 \times 100 = n$

think

Now I am a number
You rarely can beat.
When I am a factor
I surely am neat.
Use the other factor.
Make zero the tail.
You'll see the product.
You really can't fail.

WHO AM I?



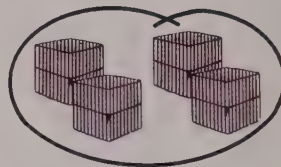
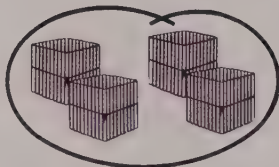
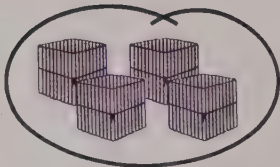
Discussing the Ideas

1.



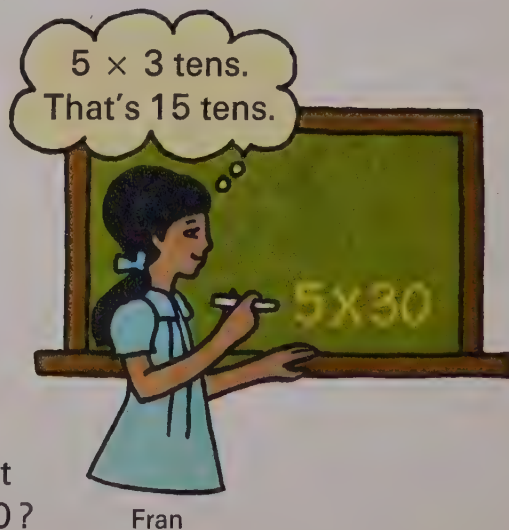
- A How many tens in each ring?
- B How many tens in all?
- C How many sticks in all?
- D 3×4 tens is how many tens?
- E Solve: $3 \times 40 = n$

2.



- A How many hundreds in each ring?
- B How many hundreds in all?
- C How many sticks in all?
- D 3×4 hundreds is how many hundreds?
- E Solve: $3 \times 400 = n$

- 3. A Explain how Fran is thinking about the product 5×30 .
- B Write the numeral for 15 tens.
- C Solve: $5 \times 30 = n$
- D How would Fran think about 2×70 ? 4×60 ? 7×30 ?



Using the Ideas

1. Give the missing numbers.

$$4 \times 20$$

A $4 \times \text{||||| tens}$
 ||||| tens in all
 $4 \times 20 = n$

$$5 \times 30$$

B $5 \times \text{||||| tens}$
 ||||| tens in all
 $5 \times 30 = n$

$$6 \times 40$$

C $6 \times \text{||||| tens}$
 ||||| tens in all
 $6 \times 40 = n$

2. Solve the equations.

A $(4 \times 2) \times 10 = n$
 $4 \times (2 \times 10) = n$
 $4 \times 20 = n$

C $(6 \times 4) \times 10 = n$
 $6 \times (4 \times 10) = n$
 $6 \times 40 = n$

B $(5 \times 3) \times 10 = n$
 $5 \times (3 \times 10) = n$
 $5 \times 30 = n$

D $(7 \times 3) \times 10 = n$
 $7 \times (3 \times 10) = n$
 $7 \times 30 = n$

3. Find the products.

A 4×6
 4×60
 4×600

C 3×7
 3×70
 3×700

E 3×9
 3×90
 3×900

G 7×4
 7×40
 7×400

B 6×3
 6×30
 6×300

D 5×7
 5×70
 5×700

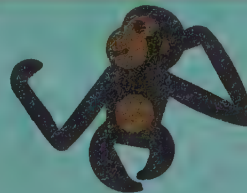
F 6×6
 6×60
 6×600

H 5×8
 5×80
 5×800

4. Find the products.

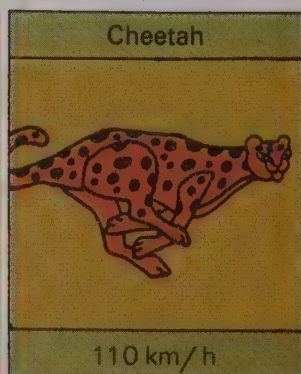
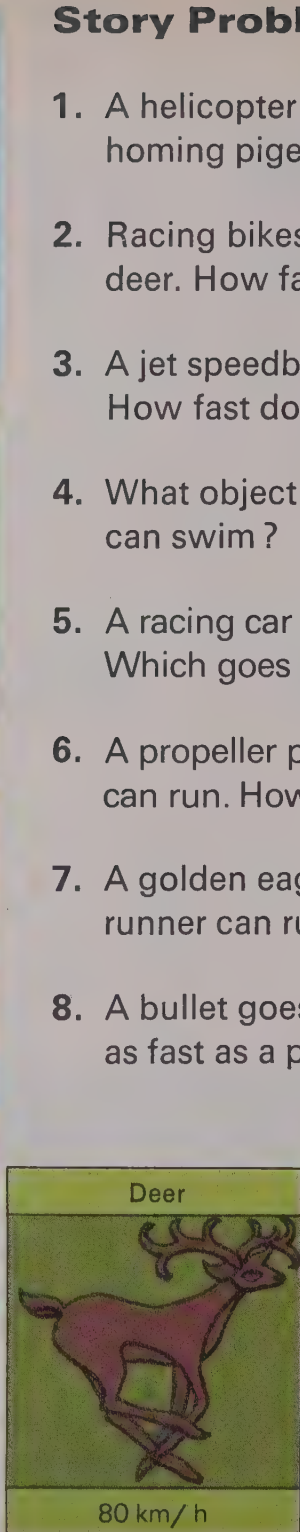
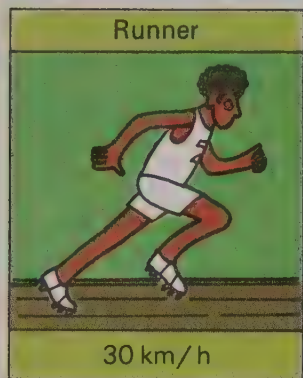
A 3×70	K 8×40
B 3×700	L 3×80
C 4×30	M 2×90
D 4×300	N 9×30
E 2×80	O 5×50
F 2×800	P 8×400
G 6×10	Q 2×900
H 6×100	R 9×300
I 7×20	S 5×500
J 7×200	T 4×800

think



If it's products you are after,
 I will lend a helping hand.
 Just use me over and over,
 On the answer you will land.

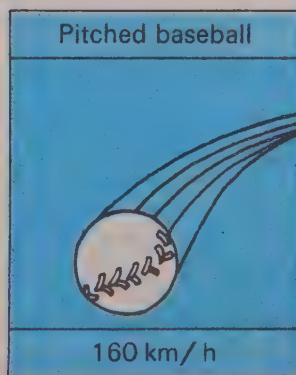
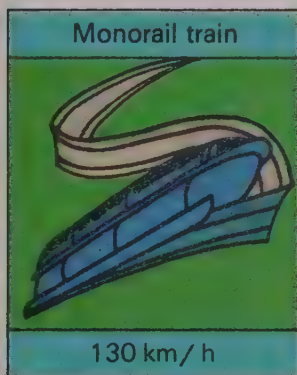
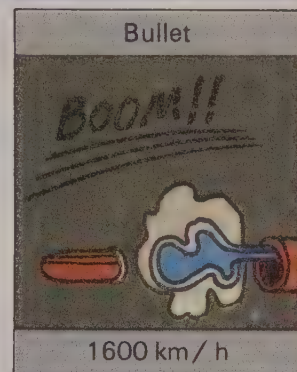
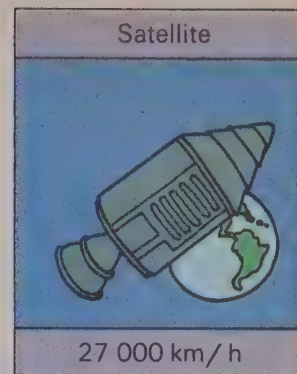
WHO AM I?



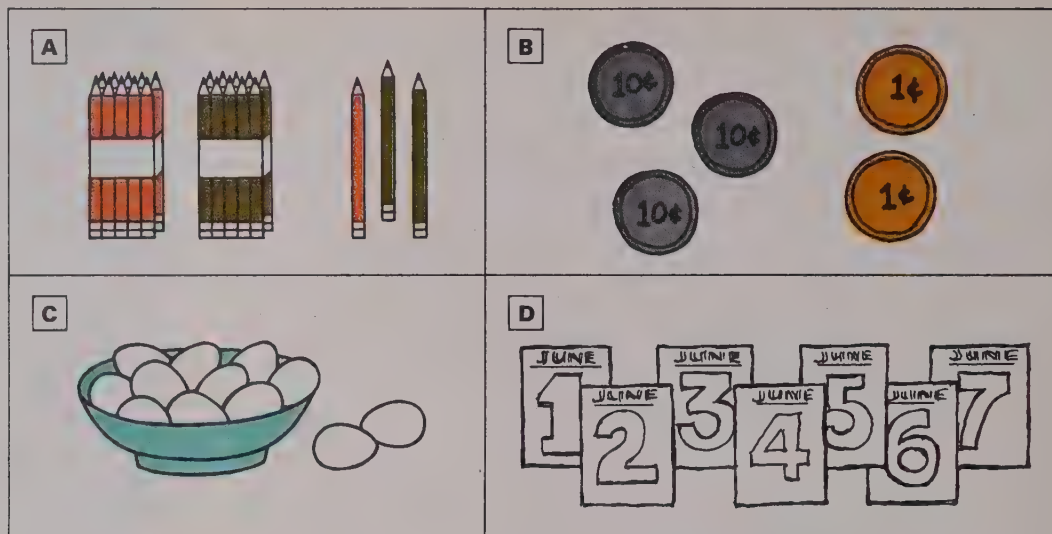
Story Problems

1. A helicopter can fly about 3 times as fast as a homing pigeon. How fast can the helicopter fly?
2. Racing bikes can be made to go 2 times as fast as a deer. How fast can racing bikes go?
3. A jet speedboat goes 9 times as fast as a sailboat. How fast does a jet speedboat go?
4. What object can go 10 times as fast as a pike can swim?
5. A racing car runs for 10 hours. A jet flies for 7 hours. Which goes farther? How much farther?
6. A propeller plane can fly 9 times as fast as a deer can run. How fast can a propeller plane fly?
7. A golden eagle can fly about 6 times as fast as a runner can run. How fast can the eagle fly?
8. A bullet goes how many times as fast as a pitched baseball?

9. If a cheetah could run 6 times as fast as usual, could it catch a racing car ?
How fast would the cheetah be running ?
10. A man flies in a jet plane from Halifax, Nova Scotia, to Edmonton, Alberta. It takes him 4 hours for the trip. About how far is it between the two cities ?
11. A boy rode for 2 hours on a monorail train. How far did he ride ?
12. A homing pigeon was taken 500 kilometres from home. About how many hours would it take the pigeon to fly back home ?
13. A racing car can go how many times as fast as a deer ?
14. How much faster than its usual rate would a vulture have to fly to pass a jet plane ?
15. A satellite circles the earth for 10 hours. How far does it travel ?



Solving Multiplication-Addition Problems



1. **A** How many pencils do you see in figure A ?
B If John has 2 times as many pencils, how many does he have ?
C Suppose Rose has 3 times as many pencils as in A.
 How many pencils does she have ?

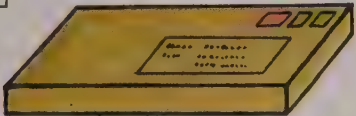






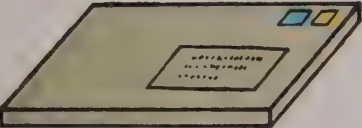



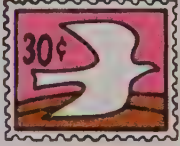



2. **A** What is the value in cents of the money pictured in figure B ?
B If Tom has twice that much money, how much does he have ?
C Suppose a toy cost 3 times as much as the amount
 pictured in B. How much does the toy cost ?

3. **A** One dozen is 10 and 2. (See figure C.)
 How many are in a dozen ?
B How many are in 3 dozen ?
C How many are in 4 dozen ?
D How many are in 5 dozen ?

4. **A** Look at figure D and tell how many days are in a week.
B How many days are in 10 weeks ?
C How many days are in 50 weeks ?
D How many days are in 52 weeks ?

Solving Story Problems

MAILING PACKAGES

Package	Stamps needed
A 	  
B 	 
C 	 
D 	   

- A** How much did it cost to mail package A ?

B How much would it cost to mail 3 packages like this one ?
- A** How much did it cost to mail package B ?

B How much would it cost to mail 4 packages like this one ?
- A** How much did it cost to mail package C ?

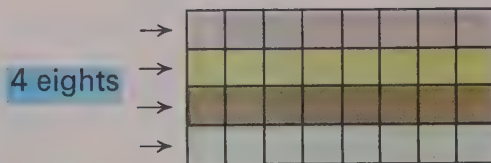
B How much would it cost for 3 such packages ?
- A** How much did it cost to mail package D ?

★ **B** How much would it cost to mail 5 such packages ?

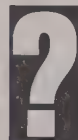
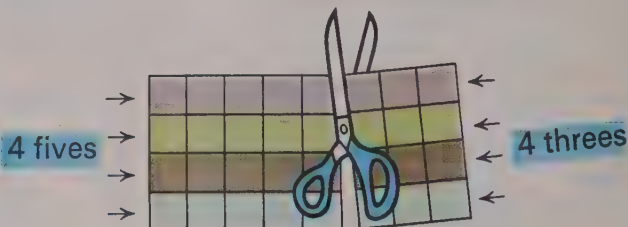
● Let's explore the multiplication-addition principle again.

Investigating the Ideas

Cut a 4-by-8 rectangle from graph paper. Color each row of 8 a different color.



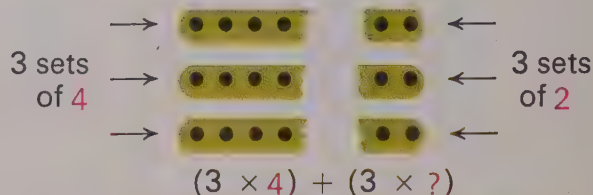
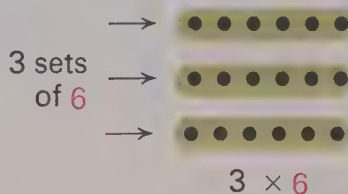
Another way to think about 4 eights is shown by the cut. Now you have 4 fives and 4 threes.



Can you show how to think about 4 eights in a different way by cutting another 4-by-8 rectangle?

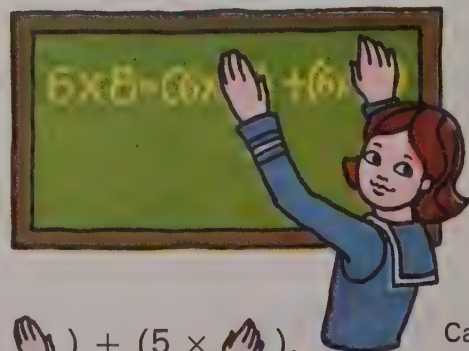
Discussing the Ideas

1. Study the figure below. Give the missing number.



2. Carol's hands are covering two numbers.

- A Could the numbers be 6 and 2?
- B Could the numbers be 3 and 2?
- C Write 5 different equations to show what pairs of numbers Carol might be hiding.



Carol

- D Repeat part C for $5 \times 9 = (5 \times \text{hand}) + (5 \times \text{hand})$.

1. Give the missing word.

A 4 fives and 4 ___? ___
 4×7

B 7 threes and 7 ___? ___
 7×5

C 5 fives and 5 ___? ___
 5×7

D 7 sixes and 7 ___? ___
 7×8

E 3 fives and 3 ___? ___
 3×9

F 6 fours and 6 ___? ___
 6×7

G 4 tens and 4 ___? ___
 4×12

H 2 twenties and 2 ___? ___
 2×26

2. Find the missing number.

- A $8 \times 6 = (8 \times 3) + (8 \times n)$
- B $4 \times 7 = (4 \times 5) + (4 \times n)$
- C $3 \times 8 = (3 \times 4) + (3 \times n)$
- D $7 \times 7 = (7 \times 2) + (7 \times n)$
- E $9 \times 3 = (9 \times n) + (9 \times 2)$
- F $6 \times 12 = (6 \times 10) + (6 \times n)$
- G $5 \times 18 = (5 \times 10) + (5 \times n)$
- H $3 \times 23 = (3 \times n) + (3 \times 3)$

think

Subtract 24 from me,
 Or take me from 42.
 Your answer is the same,
 Whichever one you do.

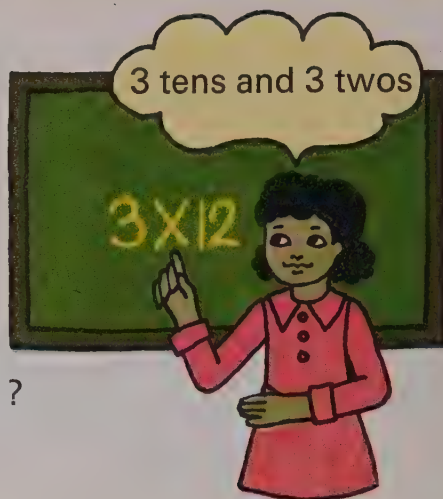
WHO AM I?



● How can you use the multiplication-addition principle?

Discussing the Ideas

1. Explain how Sue is thinking about the product 3×12 .
2. Write the numeral for 3 tens.
3. Write the numeral for 3 twos.
4. Give the product for 3×12 .
5. How would Sue think about 2×13 ?
6. Find the product for 2×13 .
7. Give the missing numbers.



A

4 tens and 4_? _

$$4 \times 12$$

B

$$(4 \times 10) + (4 \times n)$$

$$4 \times 12$$

8. Solve the equations.

A $4 \times 12 = (4 \times 10) + (4 \times n)$

B $2 \times 13 = (2 \times 10) + (2 \times n)$

C $3 \times 11 = (3 \times 10) + (3 \times n)$

D $5 \times 11 = (5 \times 10) + (5 \times n)$

E $3 \times 23 = (3 \times n) + (3 \times 3)$

F $5 \times 14 = (5 \times n) + (5 \times 4)$

G $4 \times 24 = (4 \times n) + (4 \times 4)$

H $3 \times 27 = (3 \times n) + (3 \times 7)$

9. A What is 4×10 ?

B What is 4×5 ?

C What is $(4 \times 10) + (4 \times 5)$?

D What is 4×15 ?

10. A What is 3×10 ?

B What is 3×4 ?

C What is $(3 \times 10) + (3 \times 4)$?

D What is 3×14 ?

Find the products and sums.

1. A $3 \times 10 = n$
 B $3 \times 2 = n$
 C $(3 \times 10) + (3 \times 2) = n$
 D $3 \times 12 = n$
2. A $4 \times 10 = n$
 B $4 \times 2 = n$
 C $(4 \times 10) + (4 \times 2) = n$
 D $4 \times 12 = n$
3. A $2 \times 10 = n$
 B $2 \times 3 = n$
 C $(2 \times 10) + (2 \times 3) = n$
 D $2 \times 13 = n$
4. A $2 \times 30 = n$
 B $2 \times 4 = n$
 C $(2 \times 30) + (2 \times 4) = n$
 D $2 \times 34 = n$
5. A $2 \times 20 = n$
 B $2 \times 3 = n$
 C $(2 \times 20) + (2 \times 3) = n$
 D $2 \times 23 = n$
6. A $3 \times 20 = n$
 B $3 \times 3 = n$
 C $(3 \times 20) + (3 \times 3) = n$
 D $3 \times 23 = n$
7. A $6 \times 10 = n$
 B $6 \times 3 = n$
 C $(6 \times 10) + (6 \times 3) = n$
 D $6 \times 13 = n$
8. A $4 \times 20 = n$
 B $4 \times 4 = n$
 C $(4 \times 20) + (4 \times 4) = n$
 D $4 \times 24 = n$

think

This is a game for two. The object is to cover the 10-unit strip exactly with the 1-unit and 2-unit pieces. Start at the left and take turns placing either a 1-unit or a 2-unit side by side until the 10-unit is exactly covered. The last one to put down a strip wins the game.

1-unit



Make 8
of these

2-unit



Make 5
of these



Try this game using an 11-unit strip. Try it with a 12-unit strip.

Investigating the Ideas

You know that

$$3 \times 54 = (3 \times 50) + (3 \times 4).$$

Let's use a function-machine table to help us find this product. What is the missing number in the table?

$$3 \times 54$$

Multiply by 3	
input	output
4	12
50	150
54	



Can you make tables of your own to find these products?

1. 2×34 2. 4×36 3. 3×65

Discussing the Ideas

Let's look at a shorter way to write the work.

$$3 \times 48$$

Multiply by 3	
8	24
40	120
48	144

Step 1	Step 2	Step 3
$\begin{array}{r} 48 \\ \times 3 \\ \hline 24 \end{array}$		$\begin{array}{r} 48 \\ \times 3 \\ \hline 24 \\ 120 \\ \hline 144 \end{array}$
$3 \times 8 = 24$	$3 \times 40 = 120$	$24 + 120 = 144$

- Which part of the table is like step 1?
- Which is like step 2?
- Which is like step 3?
- Now try the same method with these.

A 3×64
B 2×76

Find the products.

1. $\begin{array}{r} 14 \\ \times 5 \\ \hline \end{array}$

2. $\begin{array}{r} 38 \\ \times 2 \\ \hline \end{array}$

3. $\begin{array}{r} 24 \\ \times 3 \\ \hline \end{array}$

4. $\begin{array}{r} 19 \\ \times 4 \\ \hline \end{array}$

5. $\begin{array}{r} 47 \\ \times 4 \\ \hline \end{array}$

6. $\begin{array}{r} 34 \\ \times 2 \\ \hline \end{array}$

7. $\begin{array}{r} 67 \\ \times 3 \\ \hline \end{array}$

8. $\begin{array}{r} 35 \\ \times 2 \\ \hline \end{array}$

9. $\begin{array}{r} 36 \\ \times 5 \\ \hline \end{array}$

10. $\begin{array}{r} 58 \\ \times 3 \\ \hline \end{array}$

11. $\begin{array}{r} 75 \\ \times 4 \\ \hline \end{array}$

12. $\begin{array}{r} 17 \\ \times 4 \\ \hline \end{array}$

13. $\begin{array}{r} 18 \\ \times 3 \\ \hline \end{array}$

14. $\begin{array}{r} 22 \\ \times 4 \\ \hline \end{array}$

15. $\begin{array}{r} 94 \\ \times 3 \\ \hline \end{array}$

16. $\begin{array}{r} 26 \\ \times 3 \\ \hline \end{array}$

17. $\begin{array}{r} 29 \\ \times 5 \\ \hline \end{array}$

18. $\begin{array}{r} 18 \\ \times 2 \\ \hline \end{array}$

19. $\begin{array}{r} 31 \\ \times 8 \\ \hline \end{array}$

20. $\begin{array}{r} 73 \\ \times 4 \\ \hline \end{array}$

21. $\begin{array}{r} 19 \\ \times 3 \\ \hline \end{array}$

22. $\begin{array}{r} 42 \\ \times 7 \\ \hline \end{array}$

23. $\begin{array}{r} 27 \\ \times 3 \\ \hline \end{array}$

24. $\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$

Short Stories

1 12 dogs,
4 legs each.
How many
legs in all?



3 12 spiders,
8 legs per spider.
How many legs?

4 13 octopuses,
8 arms each.
How many arms?



2 14 ants, 6 legs per ant.
How many legs?

5 14 crayfish,
10 legs each.
How many legs?



6 36 crickets, 6 legs each.
How many legs?

7 42 fish,
no legs per fish.
How many
legs in all?



8 4 centipedes,
36 legs each.
How many legs?



● Let's look at a shortcut for finding products.

Discussing the Ideas

1. Explain each step of the long method.
2. Explain how step 1 of the shortcut is like step 1 of the long method.
3. Explain how step 2 of the shortcut puts together step 2 and step 3 of the long method.
4. Explain each step in this exercise.

$$\begin{array}{r} 2 \\ 18 \\ \times 3 \\ \hline 54 \end{array}$$

Long Method		
Step 1	Step 2	Step 3
$\begin{array}{r} 46 \\ \times 3 \\ \hline 18 \end{array}$	$\begin{array}{r} 46 \\ \times 3 \\ \hline 18 \\ 120 \end{array}$	$\begin{array}{r} 46 \\ \times 3 \\ \hline 18 \\ 120 \\ \hline 138 \end{array}$
$3 \times 6 = 18$	$3 \times 40 = 120$	$18 + 120 = 138$

Shortcut	
Step 1	Step 2
$\begin{array}{r} 1 \\ 46 \\ \times 3 \\ \hline 8 \end{array}$	$\begin{array}{r} 1 \\ 46 \\ \times 3 \\ \hline 138 \end{array}$
$3 \times 6 = 18$	$3 \times 40 = 120 \quad 120 + 10 = 130$

5. Now try the shortcut with this one. 4×23
6. Carl used the long method, but he made a mistake. Can you explain what he did wrong and find the correct product?
7. Beth Ann used the shortcut, but she also made a mistake. Can you explain what she did wrong?

Carl

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 24 \\ 12 \\ \hline 36 \end{array}$$

Beth Ann

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 124 \end{array}$$

Using the Ideas

In exercises 1 through 18, find the product.

$$\begin{array}{r} 1. \quad 24 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 15 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 38 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 24 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 19 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 47 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 39 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 21 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 30 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 63 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 37 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 37 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 26 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 54 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 67 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 75 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 54 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 68 \\ \times 4 \\ \hline \end{array}$$

Solving Story Problems

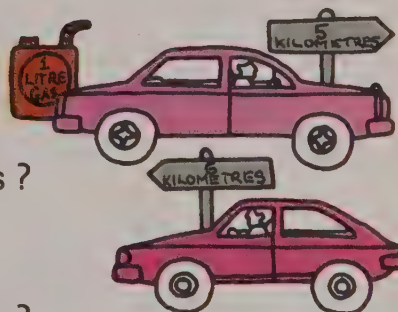
- Mr. McCoy can drive his car about 6 kilometres on one litre of gas. How far can he drive on 15 litres of gas?

- Mr. Ito's car goes only 5 kilometres on each litre of gas. How far can he drive on 17 litres of gas?

- Mr. Sims has a small car and can drive 8 kilometres on 1 litre of gas. How far can he drive on 14 litres of gas?

- Mr. Le Blanc can drive 56 kilometres on 7 litres of gas. Mr. Brown can drive 7 kilometres on 1 litre of gas. Who can drive farther

- on 8 litres of gas?
- on 4 litres of gas?
- on 2 litres of gas?
- on 1 litre of gas?



think

Together, a doll and a dress cost \$11. The doll cost \$10 more than the dress. How much was the doll?

Building Multiplication Skills

1. Find the products.

A 3×6

B 7×4

C 3×9

D 5×8

E 9×8

F 7×7

G 3×7

H 8×3

I 4×9

J 6×8

K 9×9

L 8×7

M 6×4

N 4×8

O 9×5

P 5×7

Q 7×9

R 6×6

S 5×6

T 5×5

U 9×6

V 6×7

W 5×4

X 8×8

2. Find the products.

A 6×10

B 10×9

C 40×4

D 15×10

E 5×30

F 6×50

G 10×34

H 80×10

I 7×20

J 10×68

K 9×90

L 10×84

M 7×30

N 80×6

O 5×90

P 70×4

Q 3×90

R 2×60

S 70×10

T 85×10

3. Find the products.

A 32
 $\times 3$

B 43
 $\times 2$

C 44
 $\times 2$

D 17
 $\times 2$

E 28
 $\times 3$

F 19
 $\times 4$

4. Find the products.

A 47
 $\times 4$

B 56
 $\times 5$

C 87
 $\times 2$

D 27
 $\times 3$

E 56
 $\times 4$

F 65
 $\times 6$

G 73
 $\times 6$

H 65
 $\times 5$

I 76
 $\times 3$

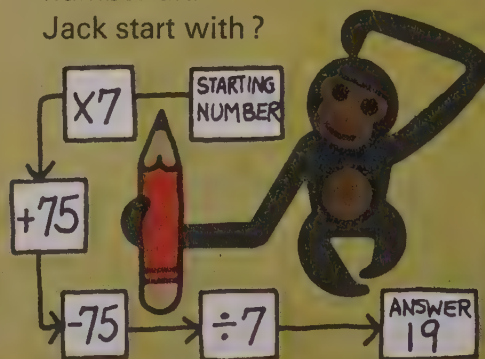
J 74
 $\times 8$

K 67
 $\times 7$

L 89
 $\times 4$

think

Jack started with a number and multiplied it by 7. Then he added 75, subtracted 75 and divided by 7. Jack's answer was 19. What number did Jack start with?



Solving Story Problems **TIME**



S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1. There are 60 seconds in 1 minute.
How many seconds are in 5 minutes?
2. There are 60 minutes in 1 hour.
How many minutes are in 9 hours?
3. There are 24 hours in 1 day, and
7 days in a week. How many hours
are in a week?
4. There are 12 months in 1 year.
How many months are in 8 years?
5. There are about 52 weeks in 1 year.
About how many weeks are in 6 years?
6. In each year, there are 7 months that
have 31 days each. How many days
in all are in these 7 months?
7. In each year, there are 4 months that
have 30 days each. How many days
in all are in these 4 months?
- ★ 8. How many days are in a year when
February has 28 days? (Use your
answers to exercises 6 and 7.)
- ★ 9. How many days are in a year
when February has 29 days?
- ★ 10. How many seconds are in one hour?
- ★ 11. How many seconds are in one day?

think

The large blocks weigh the same and the small blocks weigh the same. Each large block weighs twice as much as a small block. All the blocks together weigh 35 kilograms. How much does a large block weigh?



Improving Multiplication Skills

1. Find the products.

$$\begin{array}{r} \text{A } 37 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B } 56 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C } 95 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D } 43 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E } 82 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F } 96 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G } 54 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H } 38 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I } 69 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J } 57 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K } 70 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L } 58 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M } 49 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N } 68 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O } 65 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{P } 85 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Q } 66 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{R } 77 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \text{S } 72 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T } 48 \\ \times 5 \\ \hline \end{array}$$

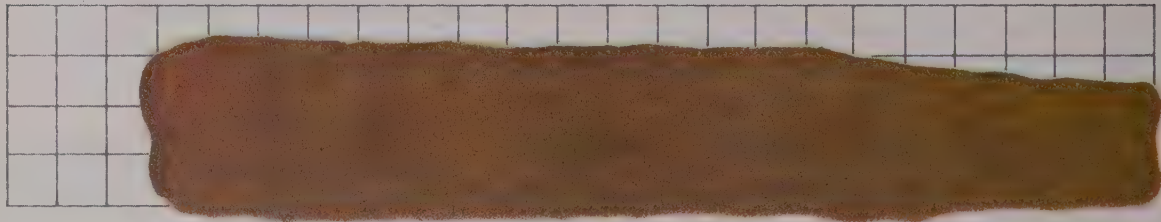
$$\begin{array}{r} \text{U } 75 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{V } 57 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{W } 79 \\ \times 2 \\ \hline \end{array}$$

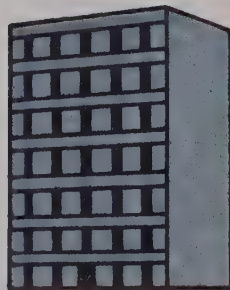
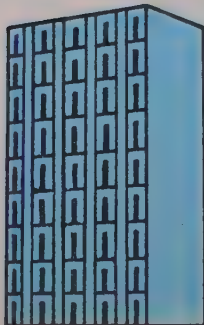
$$\begin{array}{r} \text{X } 59 \\ \times 3 \\ \hline \end{array}$$

2. Find the area of this rectangle.



3. How many rooms in each?

A 7 stories high.
25 rooms on
each floor.



B 9 stories high.
23 rooms on
each floor.

think

Jim had 1 minute to decide which of these allowances he wanted.

► \$1.00 per week
or

► Each week he gets 1¢ the first day, 2¢ the second, 4¢ the third, and so on for 7 days.

Which would you take?

Give yourself 1 minute to decide. Then figure it out.

Solving Story Problems

A MOON TRIP

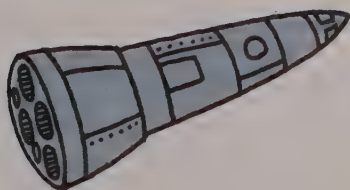
Peter thinks he would like to be an astronaut and go to the moon. He read some books to learn more about the moon. Peter wrote this paper to show his teacher.



Moon Facts

1. The United States Astronauts, Neil A. Armstrong and Edwin E. Aldrin, Jr., were the first men to land on the moon, July 20, 1969.
2. People weigh 6 times as much on earth as they do on the moon.
3. The moon goes around the earth once in about 28 days.
4. The moon is about 384 000 kilometres from the earth.
5. Scientists have found no air or water on the moon.

Peter L.



1. Peter figured he would weigh only 6 kilograms on the moon. How much does Peter weigh on earth ?
2. Peter's father would weigh 13 kilograms on the moon. How much does he weigh on earth ?
3. About how long does it take the moon to go around the earth 4 times ?
4. Suppose you could fly straight to the moon and back. How far would you travel ?
5. Peter drinks water 4 times a day. Each time he drinks about one fourth of a litre. How much water would he have to take for a 36-day moon trip ?

Investigating the Ideas

Use the products on the three cards to help you give the three products below.

$$\begin{array}{r} 300 \\ \times 3 \\ \hline 900 \end{array}$$

$$\begin{array}{r} 20 \\ \times 3 \\ \hline 60 \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$$

A
$$\begin{array}{r} 26 \\ \times 3 \\ \hline \end{array}$$

B
$$\begin{array}{r} 320 \\ \times 3 \\ \hline \end{array}$$

C
$$\begin{array}{r} 326 \\ \times 3 \\ \hline \end{array}$$



Can you make some cards like these that would help a classmate find this product?

$$\begin{array}{r} 243 \\ \times 4 \\ \hline \end{array}$$

Discussing the Ideas

1. Explain each step in the example below.

Step 1	Step 2	Step 3	Step 4
$\begin{array}{r} 237 \\ \times 4 \\ \hline 28 \end{array}$	$\begin{array}{r} 237 \\ \times 4 \\ \hline 28 \\ \rightarrow 120 \end{array}$	$\begin{array}{r} 237 \\ \times 4 \\ \hline 28 \\ 120 \\ \rightarrow 800 \end{array}$	$\begin{array}{r} 237 \\ \times 4 \\ \hline 28 \\ 120 \\ 800 \\ \hline 948 \end{array}$
$4 \times 7 = 28$	$4 \times 30 = 120$	$4 \times 200 = 800$	$28 + 120 + 800 = 948$

2. You know the first product. Find each of the other products.

$$\begin{array}{r} 237 \\ \times 4 \\ \hline 948 \end{array}$$

A
$$\begin{array}{r} 2000 \\ \times 4 \\ \hline \end{array}$$

B
$$\begin{array}{r} 2237 \\ \times 4 \\ \hline \end{array}$$

C
$$\begin{array}{r} 3237 \\ \times 4 \\ \hline \end{array}$$

Find the products.

1.
$$\begin{array}{r} 231 \\ \times 3 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 213 \\ \times 4 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 116 \\ \times 5 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 326 \\ \times 2 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 207 \\ \times 3 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 128 \\ \times 4 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 382 \\ \times 2 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 144 \\ \times 3 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 143 \\ \times 6 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 162 \\ \times 5 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 211 \\ \times 9 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 264 \\ \times 3 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 225 \\ \times 4 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 243 \\ \times 6 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 415 \\ \times 5 \\ \hline \end{array}$$

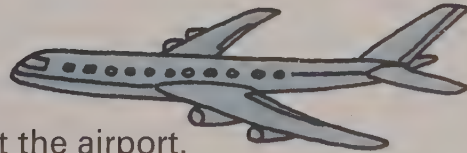
16.
$$\begin{array}{r} 1345 \\ \times 4 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 2534 \\ \times 3 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 1023 \\ \times 8 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 1203 \\ \times 9 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 1620 \\ \times 6 \\ \hline \end{array}$$

Solving Story Problems

- Miss Wright took her pupils to visit the airport. While they were there, 3 jet planes took off for Europe. Each plane carried 125 people. How many people is this in all?
- During the same visit, 4 planes arrived from Europe and Australia. Each plane carried 310 people. How many people is this in all?
- The large jet airliners have 4 engines. If each engine weighs about 3200 kilograms, what is their total weight?
- Suppose a large jet plane flies at the rate of 960 kilometres each hour. How far would it fly in 4 hours?
- A pilot told the children that some supersonic planes fly 3 times as fast as jets fly now. How fast is this? (Use the speed in exercise 4.)

Investigating the Ideas

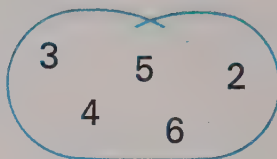
Sara is estimating the product 4×49 . When we estimate an answer to a problem, we try to find a number that is "close" to the correct answer.

4×50

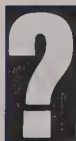
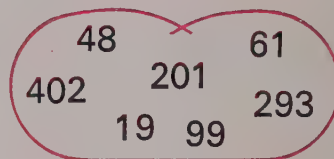


Work with one or more classmates. Choose one number from **Set A** and another from **Set B**. Each of you write down your estimate of the product.

Set A



Set B



Can you find the difference between your estimate and the actual product?

Discussing the Ideas

1. Explain how Sara found an estimate for 4×49 .
2. Find the product in the red cloud. Explain why this is a "good estimate" of the product below.

A 4×50

4×51

B 3×40

3×39

C 12×100

12×99

D 6×200

6×204

3. Give an estimate for each product.
Explain how you found your estimate.

A 3×69

B 5×38

C 7×21

D 6×98

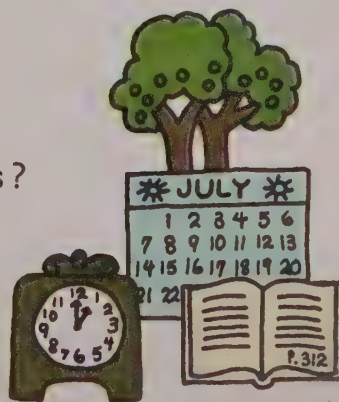
E 7×297

Estimate each product.

- | | | | |
|------------------|-------------------|-------------------|--------------------|
| 1. 3×82 | 4. 25×99 | 7. 5×199 | 10. 4×299 |
| 2. 4×69 | 5. 6×61 | 8. 6×58 | 11. 5×302 |
| 3. 8×99 | 6. 3×91 | 9. 2×197 | 12. 8×493 |

Which of the three numbers is a "good estimate"?

13. An airplane flew 920 kilometres each hour for 4 hours. About how many kilometres did it fly? A 370 B 3700 C 1800
14. An orchard has 8 rows of trees with 49 trees in each row. About how many trees are in this orchard?
A 100 B 500 C 400
15. Each of 6 books has 312 pages. About how many pages are there in all? A 2000 B 600 C 3000
16. If there are 365 days in each of 3 years, about how many days is this in all? A 100 B 1000 C 10 000
17. A car has 460 moving parts. About how many moving parts are in 2 cars? A 90 B 900 C 9000
- ★ 18. There are 52 weeks in a year. About how many weeks are in $2\frac{1}{2}$ years?
A 100 B 200 C 125
- ★ 19. There are 60 minutes in an hour. About how many minutes are in $8\frac{1}{4}$ hours?
A 450 B 500 C 550
- ★ 20. There are 24 hours in a day. About how many hours are in $5\frac{1}{2}$ days?
A 110 B 130 C 150





1. Solve the equations.

- A** $4 \times 28 = (4 \times 20) + (4 \times n)$ **D** $7 \times 18 = (7 \times n) + (7 \times 8)$
B $2 \times 54 = (2 \times 50) + (2 \times n)$ **E** $6 \times 51 = (6 \times 50) + (6 \times n)$
C $3 \times 65 = (3 \times n) + (3 \times 5)$ **F** $8 \times 46 = (8 \times n) + (8 \times 6)$

2. Find the products.

- A** 100×18 **D** 2×10 **G** 100×24 **J** 75×10
B 78×10 **E** 10×136 **H** 75×100 **K** 10×23
C 6×100 **F** 37×10 **I** 20×10 **L** 4×100

3. Find the products.

- A** 3×20 **D** 6×30 **G** 7×20 **J** 3×70
B 3×40 **E** 2×80 **H** 4×30 **K** 2×90
C 5×50 **F** 9×20 **I** 5×60 **L** 4×60

4. Find the products and sums.

- A** $3 \times 20 = n$ **B** $4 \times 30 = n$
 $3 \times 4 = n$ $4 \times 6 = n$
 $(3 \times 20) + (3 \times 4) = n$ $(4 \times 30) + (4 \times 6) = n$
 $3 \times 24 = n$ $4 \times 36 = n$

5. Find the products.

- A** $\begin{array}{r} 23 \\ \times 2 \\ \hline \end{array}$ **B** $\begin{array}{r} 14 \\ \times 2 \\ \hline \end{array}$ **C** $\begin{array}{r} 32 \\ \times 3 \\ \hline \end{array}$
D $\begin{array}{r} 12 \\ \times 4 \\ \hline \end{array}$ **E** $\begin{array}{r} 11 \\ \times 5 \\ \hline \end{array}$ **F** $\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$
G $\begin{array}{r} 13 \\ \times 3 \\ \hline \end{array}$ **H** $\begin{array}{r} 22 \\ \times 4 \\ \hline \end{array}$ **I** $\begin{array}{r} 33 \\ \times 2 \\ \hline \end{array}$
J $\begin{array}{r} 24 \\ \times 2 \\ \hline \end{array}$ **K** $\begin{array}{r} 11 \\ \times 6 \\ \hline \end{array}$ **L** $\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$

6. Find the products.

- A** $\begin{array}{r} 37 \\ \times 4 \\ \hline \end{array}$ **B** $\begin{array}{r} 46 \\ \times 3 \\ \hline \end{array}$ **C** $\begin{array}{r} 25 \\ \times 2 \\ \hline \end{array}$
D $\begin{array}{r} 39 \\ \times 5 \\ \hline \end{array}$ **E** $\begin{array}{r} 43 \\ \times 6 \\ \hline \end{array}$ **F** $\begin{array}{r} 62 \\ \times 4 \\ \hline \end{array}$
G $\begin{array}{r} 92 \\ \times 3 \\ \hline \end{array}$ **H** $\begin{array}{r} 49 \\ \times 4 \\ \hline \end{array}$ **I** $\begin{array}{r} 65 \\ \times 2 \\ \hline \end{array}$
J $\begin{array}{r} 238 \\ \times 3 \\ \hline \end{array}$ **K** $\begin{array}{r} 1292 \\ \times 4 \\ \hline \end{array}$ **L** $\begin{array}{r} 2158 \\ \times 5 \\ \hline \end{array}$

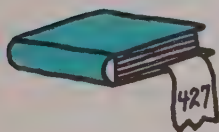
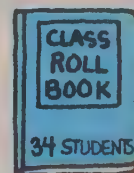
★ 7. Complete each sentence.

- A Since $4 \times 27 = 108$, we know that $5 \times 27 = 108 + n$.
B Since $6 \times 78 = 468$, we know that $7 \times 78 = 468 + n$.
C Since $6 \times 78 = 468$, we know that $5 \times 78 = 468 - n$.
D Since $9 \times 57 = 513$, we know that $8 \times 57 = 513 - n$.
E Since $7 \times 83 = 581$, we know that $8 \times 83 = 581 + n$.
F Since $8 \times 47 = 376$, we know that $7 \times 47 = 376 - n$.
G Since $4 \times 348 = 1392$, we know that $5 \times 348 = 1392 + n$.
H Since $9 \times 176 = 1584$, we know that $8 \times 176 = 1584 - n$.
I Since $27 \times 38 = 1026$, we know that $28 \times 38 = 1026 + n$.
J Since $85 \times 67 = 5695$, we know that $84 \times 67 = 5695 - n$.

Short Stories

1 13 rows of chairs.
6 chairs in each row.
How many chairs?

2 3 classes of children.
34 children in each class.
How many children?



3 427 pages in each book. 7 books. How many pages?

4 36 rooms on each floor.
9 floors. How many rooms?

5 10 pencils in each bundle.
68 bundles.
How many pencils?

6 7 dozen eggs. How many eggs?



7 4 golf balls in a box.
83 boxes.
How many golf balls?

8 6 wheels on a truck.
12 trucks.
How many wheels?

9 100 centimetres in a metre. How many centimetres in 36 metres?

10 11 players on each team.
How many players on 7 teams?

1. Find the sums and differences.

$$\begin{array}{r} \text{A} \quad 34 \\ + 51 \\ \hline \end{array}$$

$$\begin{array}{r} \text{B} \quad 76 \\ - 24 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 67 \\ + 12 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 87 \\ - 32 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 15 \\ + 84 \\ \hline \end{array}$$

$$\begin{array}{r} \text{F} \quad 95 \\ - 13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 67 \\ + 89 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 132 \\ - 57 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 76 \\ + 98 \\ \hline \end{array}$$

$$\begin{array}{r} \text{J} \quad 161 \\ - 82 \\ \hline \end{array}$$

$$\begin{array}{r} \text{K} \quad 85 \\ + 67 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 153 \\ - 95 \\ \hline \end{array}$$

2. Find the missing factors.

$$\text{A} \quad 6 \times n = 42$$

$$\text{D} \quad 6 \times n = 48$$

$$\text{G} \quad 3 \times n = 27$$

$$\text{J} \quad 9 \times n = 0$$

$$\text{B} \quad n \times 5 = 15$$

$$\text{E} \quad n \times 4 = 36$$

$$\text{H} \quad 6 \times n = 36$$

$$\text{K} \quad 7 \times n = 49$$

$$\text{C} \quad 8 \times n = 32$$

$$\text{F} \quad n \times 5 = 35$$

$$\text{I} \quad n \times 7 = 42$$

$$\text{L} \quad n \times 3 = 9$$

3. Find the quotients.

$$\text{A} \quad \text{Since } 8 \times 9 = 72, \text{ we know that } 72 \div 9 = n.$$

$$\text{B} \quad \text{Since } 8 \times 9 = 72, \text{ we know that } 72 \div 8 = n.$$

$$\text{C} \quad \text{Since } 6 \times 8 = 48, \text{ we know that } 48 \div 6 = n.$$

$$\text{D} \quad \text{Since } 10 \times 27 = 270, \text{ we know that } 270 \div 27 = n.$$

4. There are 12 children playing kickball.

A One half of them are girls. How many of the children are girls?

B One fourth of the children wear glasses. How many of the children wear glasses?



★ 5. Copy the problems and give the missing digits.

$$\begin{array}{r} \text{A} \quad 59 \\ - \text{ } \text{ } \text{ } \text{ } \\ \hline 28 \end{array}$$

$$\begin{array}{r} \text{B} \quad 39 \\ + 6 \text{ } \text{ } \text{ } \text{ } \\ \hline \text{ } \text{ } \text{ } 6 \end{array}$$

$$\begin{array}{r} \text{C} \quad 83 \\ - 3 \text{ } \text{ } \text{ } \text{ } \\ \hline \text{ } \text{ } 6 \end{array}$$

$$\begin{array}{r} \text{D} \quad 23 \\ \times \text{ } \text{ } \text{ } \text{ } \\ \hline 46 \end{array}$$

$$\begin{array}{r} \text{E} \quad \text{ } 9 \text{ } \text{ } \text{ } \\ + 3 \text{ } \text{ } 8 \\ \hline 860 \end{array}$$

$$\begin{array}{r} \text{F} \quad \text{ } \text{ } \text{ } \text{ } \\ \times 6 \\ \hline 252 \end{array}$$

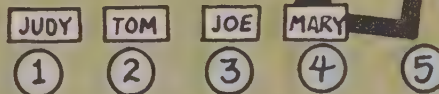


6. Find the quotients.

- | | |
|---------------|---------------|
| A $12 \div 4$ | L $15 \div 3$ |
| B $20 \div 5$ | M $14 \div 7$ |
| C $12 \div 3$ | N $20 \div 4$ |
| D $18 \div 6$ | O $12 \div 6$ |
| E $10 \div 2$ | P $25 \div 5$ |
| F $15 \div 5$ | Q $24 \div 8$ |
| G $16 \div 4$ | R $21 \div 3$ |
| H $18 \div 3$ | S $28 \div 4$ |
| I $12 \div 2$ | T $36 \div 9$ |
| J $30 \div 5$ | U $30 \div 6$ |
| K $24 \div 6$ | V $35 \div 5$ |

think

There are 16 third-graders in Pam's club at school. There are 5 third-grade teachers in the school. Explain why at least 4 of the third-grade children have the same teacher.



7. A group of 52 girls and 35 boys visited the bakery. They left at 9 o'clock in the morning and returned at 2 o'clock in the afternoon.

- How many children went on the trip?
- How many more girls went than boys?
- How long did their trip last?
- Only 23 girls rode the bus.
How many did not ride the bus?
- The boys visited one room in groups of 7.
How many groups of 7 boys were there?
- Each of the girls got 7 souvenir pencils.
How many pencils did they get in all?
- Each of the boys got 7 souvenir pencils.
How many pencils did they get in all?
- How many more pencils did the girls get than the boys?
- How many pencils did the children receive in all?



You are invited to explore

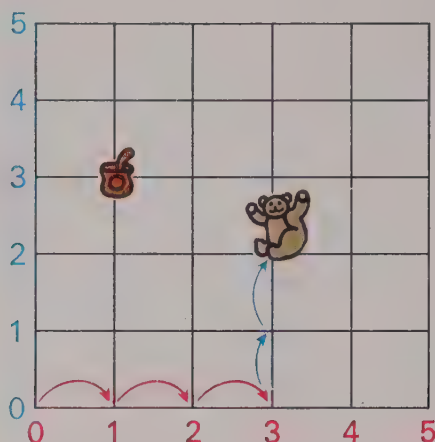
ACTIVITY
CARD 12
Page 315

Geometry and Graphing

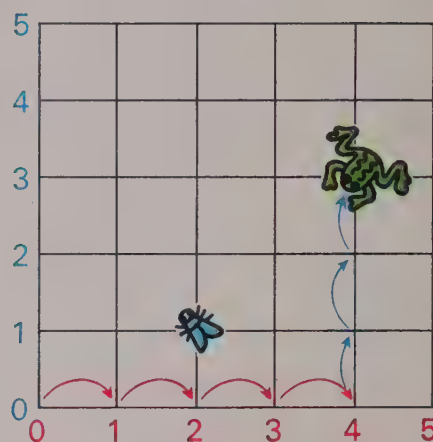
● Can number pairs show location?

Investigating the Ideas

Study the graphs.



The bear is
"3 over and 2 up."
Its co-ordinates are (3,2).



The frog is
"4 over and 3 up."
Its co-ordinates are (4,3).



Can you answer these questions about the graphs?

1. A Where is the honey?
B What are its co-ordinates?
2. A Where is the fly?
B What are its co-ordinates?

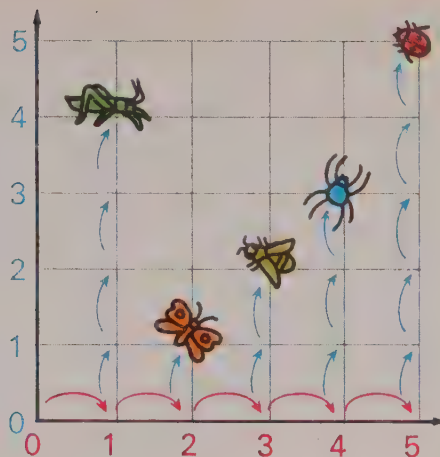
Discussing the Ideas

1. Does "2 over and 3 up" give the same location as (3,2)?
- 2 Explain how you would find the location for each of these co-ordinates.
A (2,5) B (5,4) C (3,1)

Using the Ideas

1. Give the missing numbers.

- A The butterfly is 2 over and ? up.
- B The grasshopper is ? over and 4 up.
- C The bee is ? over and ? up.
- D The spider is ? over and ? up.
- E The ladybug is ? over and ? up.



2. Give the co-ordinates for each insect above.

3. Give the missing numbers. Then give the co-ordinates.

- A The ball is 4 over and 3 up.
The co-ordinates for the ball are ___ ? ___.
- B The bird is 3 over and 7 up.
The co-ordinates for the bird are ___ ? ___.
- C The apple is 7 over and 4 up.
The co-ordinates for the apple are ___ ? ___.
- D The car is 6 over and 0 up.
The co-ordinates for the car are ___ ? ___.
- E The block is 5 over and 5 up.
The co-ordinates for the block are ___ ? ___.

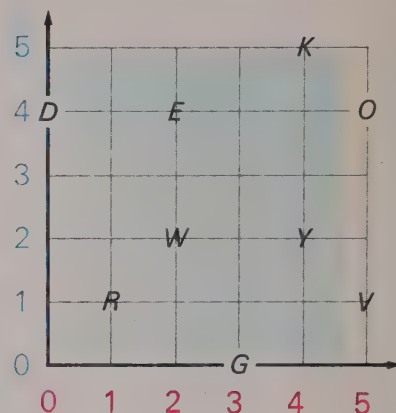


- F The key is 0 over and 3 up.
The co-ordinates for the key are ___ ? ___.
- G What are the co-ordinates for the cup ?
- H Give the co-ordinates for the flower.

Investigating the Ideas

The letters on the graph form a three-word secret message.

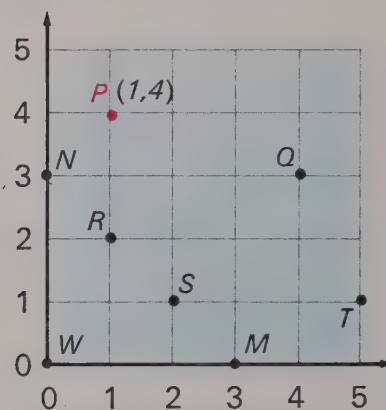
First Word:	(5,1), (2,4), (1,1), (4,2)
Second Word:	(3,0), (5,4), (5,4), (0,4)
Third Word:	(2,2), (5,4), (1,1), (4,5)



Can you find the secret message?

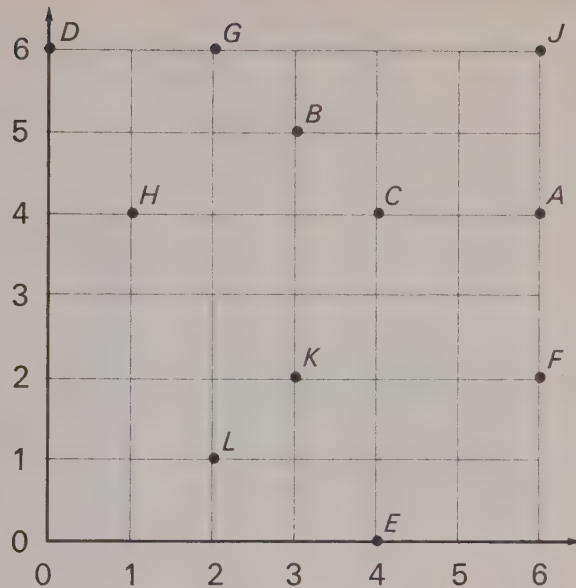
Discussing the Ideas

- The co-ordinates of the point P are $(1,4)$.
 - What are the co-ordinates of point Q ?
 - Which point has co-ordinates $(2,1)$?
 - Which point has co-ordinates $(1,2)$?
 - What are the co-ordinates of point W ?
 - Which point has co-ordinates $(0,3)$, M or N ?
- What can be said about the locations of points N , R , S , and M ?
 - What can be said about the co-ordinates of these points?



1. Answer the questions.

- A What letter is 6 over and 4 up?
- B What letter is 3 over and 5 up?
- C What letter has co-ordinates (6,4)?
- D What letter has co-ordinates (3,5)?
- E What letter is at (4,4)?
- F What letter is at (1,4)?
- G What letter has co-ordinates (4,0)?
- H Co-ordinates (0,6) locate what letter?
- I What do you find at (2,6)?
- J Co-ordinates (6,2) locate what letter?

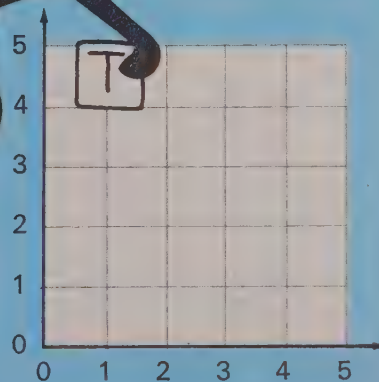
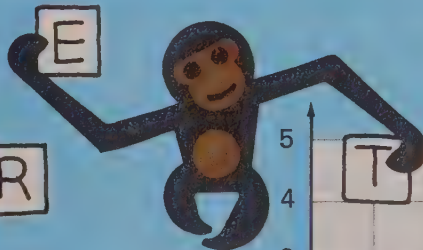


2. What are the co-ordinates of *J*, *K*, and *L* in exercise 1?

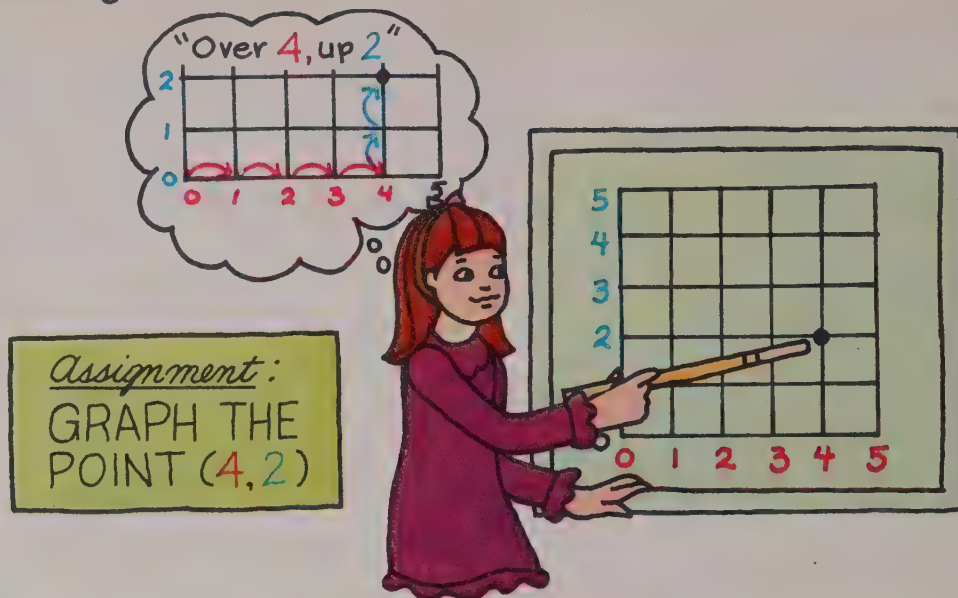
think

S E C R

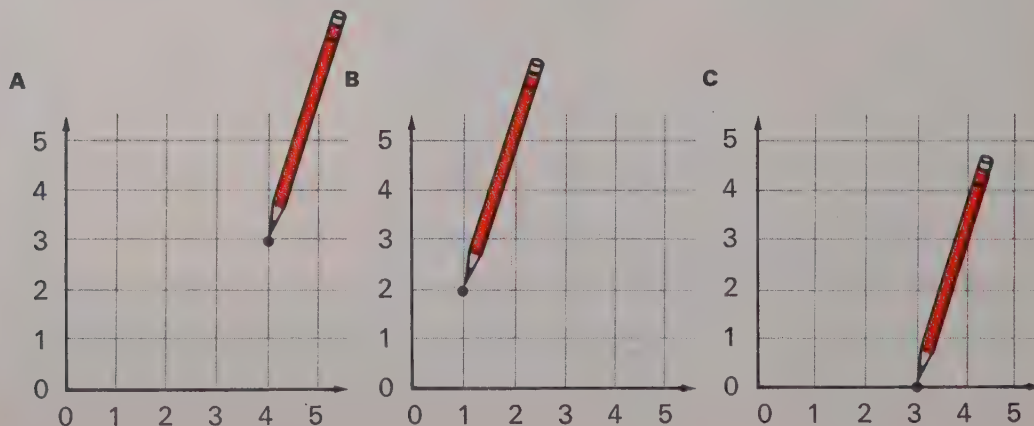
Can you write a secret message on a grid, as in the Investigation? Give the co-ordinates for your secret message to a classmate. See if he can find your message.



Discussing the Ideas



1. Jill started at 0, counted over 4 and then up 2 to find the location of the point. Could you show her an easier way?
2. Here are some other points Jill graphed. Explain how she might have counted to decide where to mark each point. What are the co-ordinates of each point?



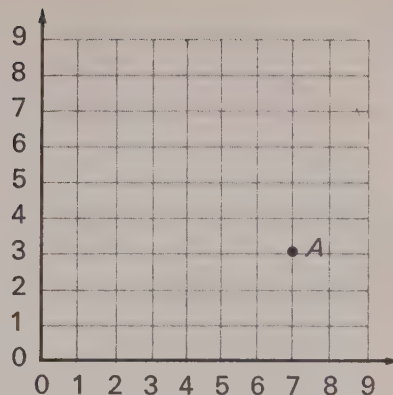
1. Label your graph paper like this.
Then graph each of these points
and write the letter beside it.

$A(7,3)$ $E(8,1)$

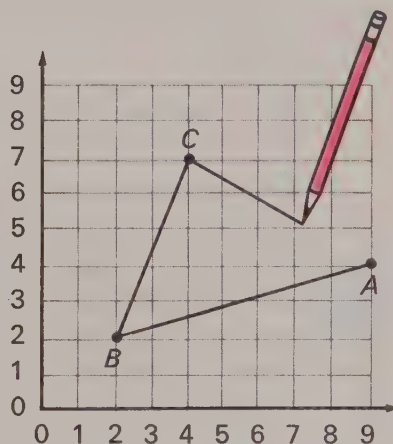
$B(3,7)$ $F(0,3)$

$C(5,5)$ $G(2,1)$

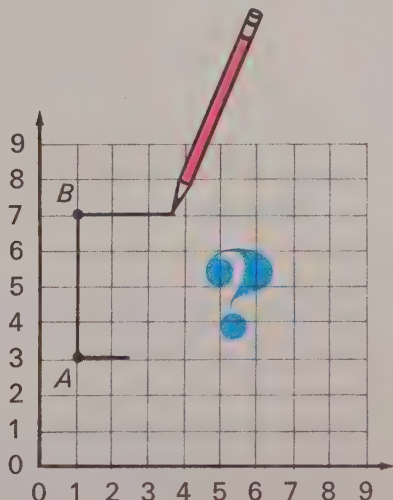
$D(1,6)$ $H(6,0)$



2. **A** Give the co-ordinates of points A , B , and C .
B What figure is formed ?
c On your paper, graph three other points to form a triangle. Give the co-ordinates of your points.
D Give the co-ordinates of three points that **cannot** be connected to form a triangle.

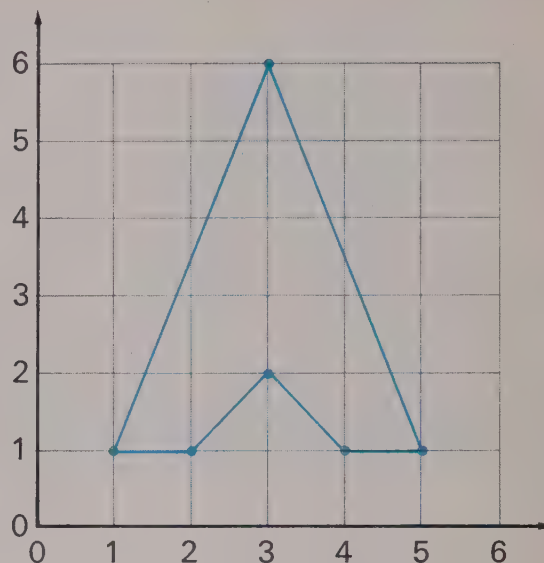


3. **A** Give the co-ordinates of points A and B .
B Give the co-ordinates of two more points needed to form a square.
c On your paper, graph four other points to form a square. Give the co-ordinates of your points.
★ **D** Give the co-ordinates of the points needed to form another figure. Graph and name the figure.



Investigating the Ideas

This teepee was made by graphing and connecting points with these co-ordinates.
 $(1,1) \rightarrow (3,6) \rightarrow (5,1) \rightarrow (4,1)$
 $\rightarrow (3,2) \rightarrow (2,1) \rightarrow (1,1)$
 The arrows show the order of the points.



?

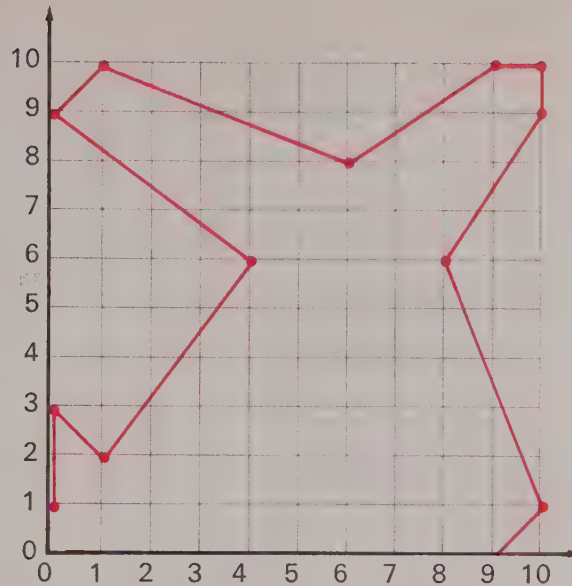
Can you make a picture by graphing and connecting these points in order? Try it.
 $(0,2) \rightarrow (3,6) \rightarrow (5,5) \rightarrow (6,2) \rightarrow (4,3)$
 $\rightarrow (5,1) \rightarrow (3,3) \rightarrow (2,0) \rightarrow (0,2)$

Discussing the Ideas

1. Could the points for the teepee be graphed and connected in a different order? Explain.
2. What point do you need to complete the picture you made in the Investigation? What are its co-ordinates?
3. Can you figure out the co-ordinates of points that will give you one of these familiar geometric figures?
 a square b parallelogram c rhombus

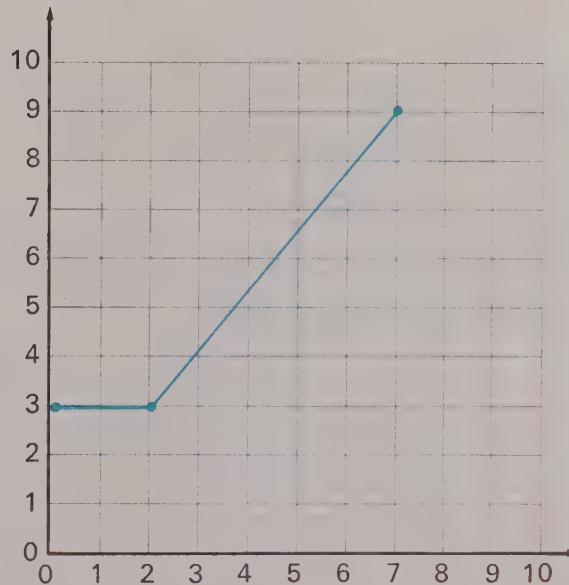
1. If these remaining 6 points are graphed and connected, the airplane will be finished.

$(9,0) \rightarrow (6,4) \rightarrow (2,1)$
 $\rightarrow (3,0) \rightarrow (1,0) \rightarrow (0,1)$
 Copy and complete the picture on your graph paper.



2. The first three points have been graphed and connected. Copy and complete the picture on your graph paper.

$(0,3) \rightarrow (2,3) \rightarrow (7,9)$
 $\rightarrow (10,10) \rightarrow (10,9)$
 $\rightarrow (9,8) \rightarrow (10,8) \rightarrow (3,2)$
 $\rightarrow (3,0) \rightarrow (2,2) \rightarrow (0,3)$



- ★ 3 Draw a picture by connecting points on your graph paper. Give the co-ordinates, in order, to a classmate and see if he can draw the picture.

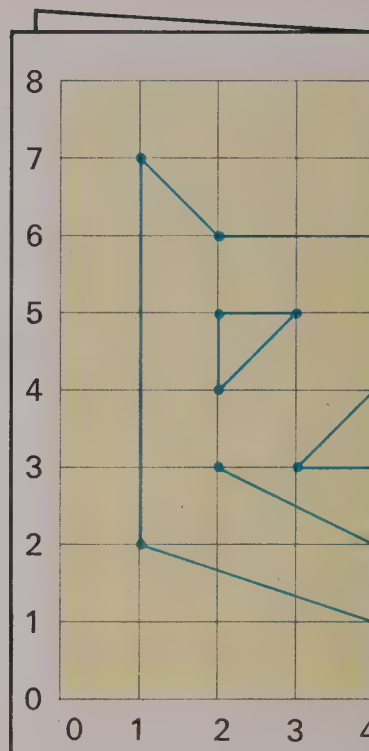
Investigating the Ideas

The paper has been folded so that only half of a symmetric figure can be seen.

Copy this part of the figure on your graph paper.



Can you show the other half of the picture on your graph?

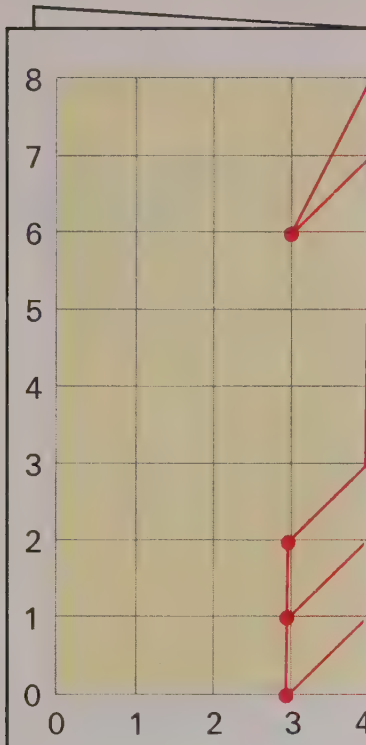


Discussing the Ideas

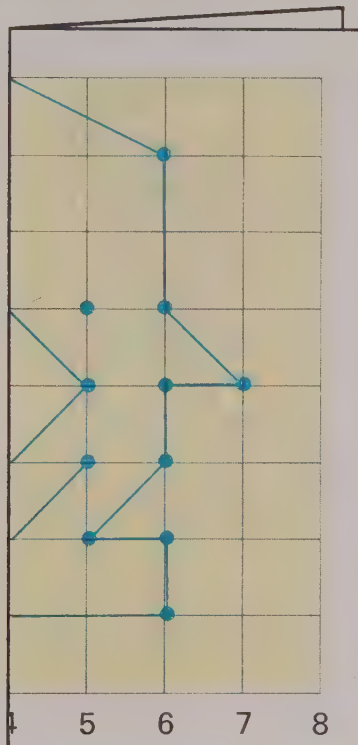
1. **A** What are the co-ordinates of the point at the tip of the cat's ear shown above?
B What are the co-ordinates of the point at the tip of the cat's other ear?
2. Pick other points and give their co-ordinates. Then give the co-ordinates of the matching points in the other half of the picture.
3. Where is the line of symmetry of the figure?

1. Use your graph paper to show what each symmetric picture will look like when the paper is unfolded.

A

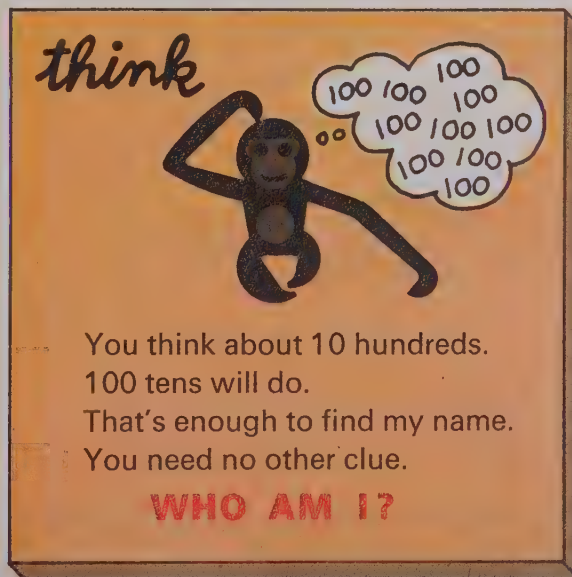


B



2. **A** Give the co-ordinates of each of the four points marked in 1 **A**.
B Give the co-ordinates of four matching points in the other half of the picture for 1 **A**.

- ★ 3. Use graph paper to make a symmetric picture of your own. Then fold it in half and see if a classmate can draw the complete picture.



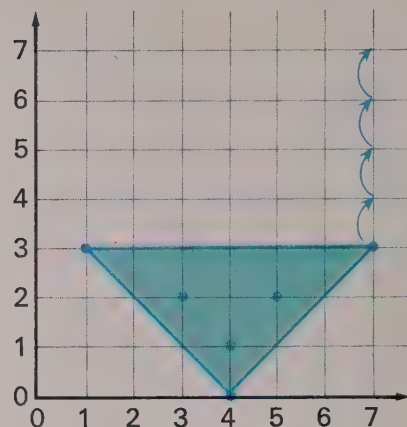
● How can figures be moved on a graph?

Investigating the Ideas

Move every point
4 up ↗



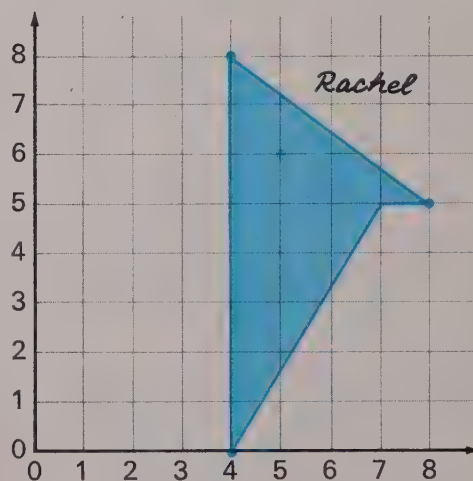
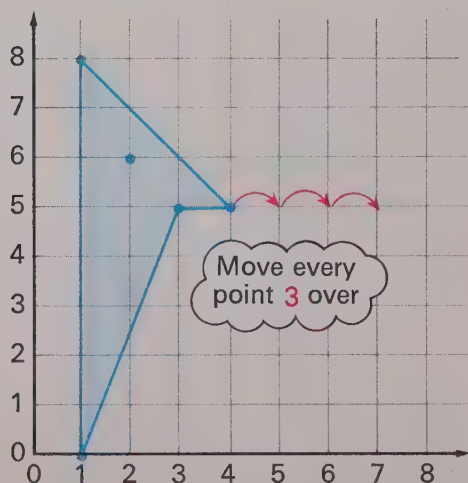
Jon



Can you show on your graph paper where the figure will be after Jon moves all the points and connects them?

Discussing the Ideas

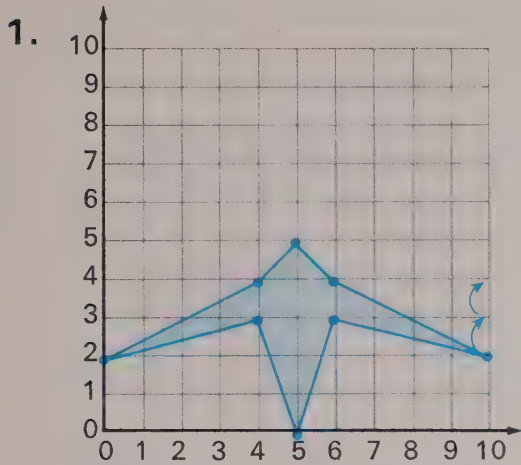
1. Look at the two figures. Did Rachel follow the directions?



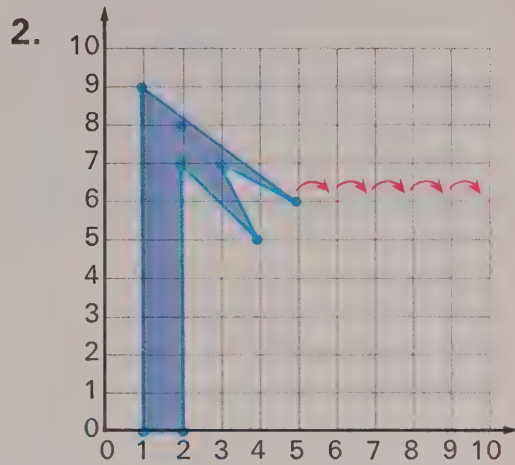
2. Can you show on your graph paper how Rachel should have drawn the figure?

Using the Ideas

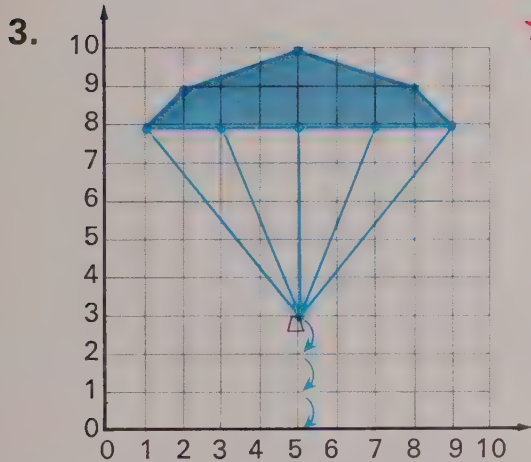
Use the moves given and show the final position of each picture on your graph paper.



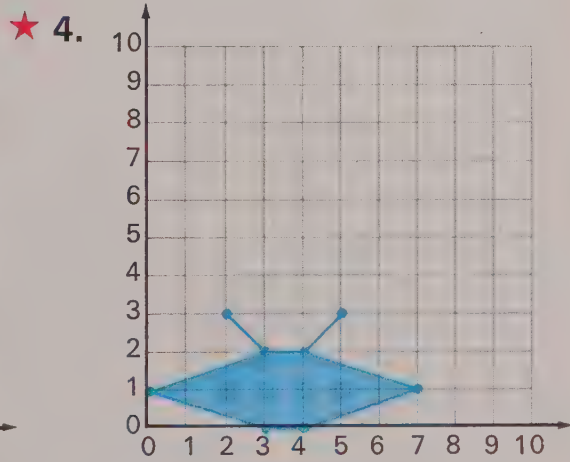
Move every point 2 up ↶.



Move every point 5 over ↷.



Move every point 3 down ↵.

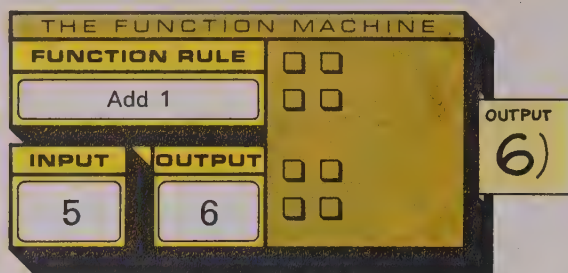


Move every point 3 over and 7 up.

- ★ 5. Make a figure of your own on graph paper and then move it 3 over and 2 up.

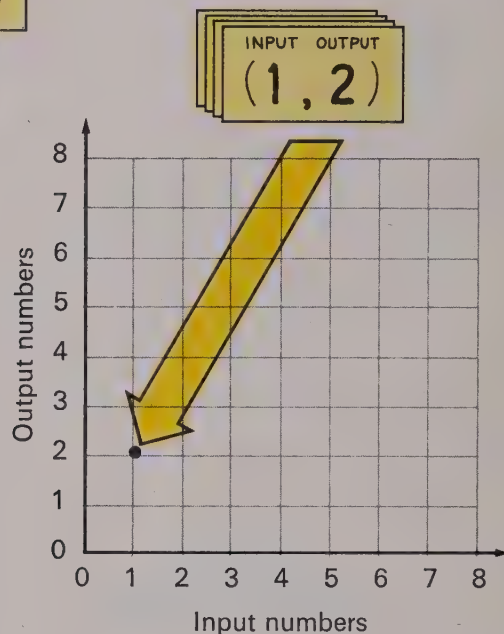
● Can input-output pairs be shown on a graph?

Investigating the Ideas



This machine puts out an **input-output** card each time it operates.

The point for the first card is shown on the graph.



Can you write the number pairs for 5 more input-output cards and show the point for each pair on a graph?

Discussing the Ideas

1. If the input number were 0, where would you mark the point on your graph?
2. Did all the points you graphed lie in a straight line?
3. Do you think the points would lie in a straight line no matter what rule was used?

- Use the function table to write the co-ordinates for points *B* through *G*. Then graph the point for each of the co-ordinates on your graph paper. Point *A* is graphed correctly.

Function Rule

Subtract 2

Input Output

2	0
3	1
4	2
5	3
6	4
7	5
8	6

→ (2, 0)

A

→ (3, █)

B

→ (4, █)

C

→ (█, █)

D

→ (█, █)

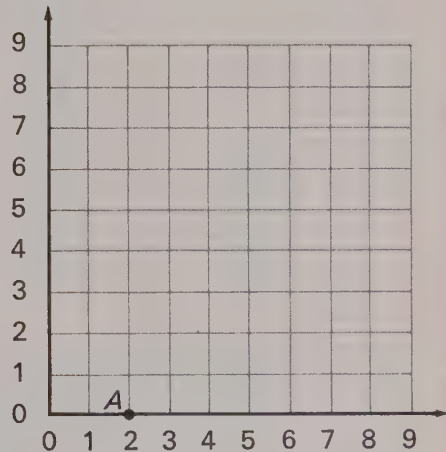
E

→ (█, █)

F

→ (█, █)

G



- Think about input-output cards and graph the points for each table.

A Function Rule

Subtract 1

Input Output

1	█
2	█
3	█
4	█
5	█
6	█

B Function Rule

Multiply by 1

Input Output

0	█
1	█
2	█
3	█
4	█
5	█

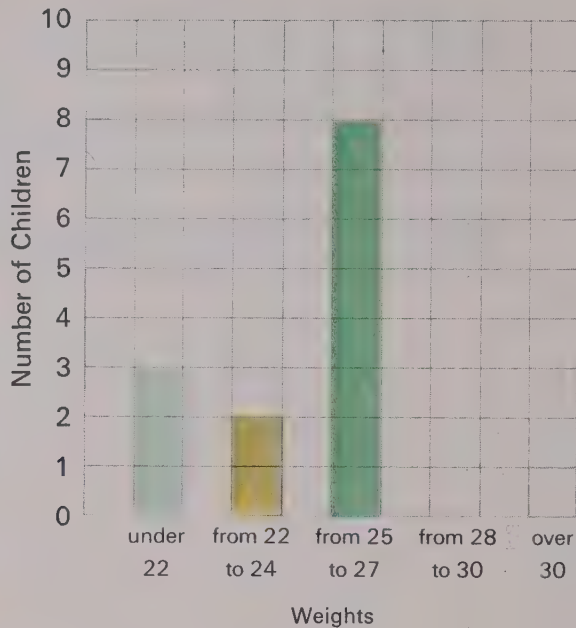
C Function Rule

Subtract from 7

Input Output

0	7
1	6
2	5
3	4
4	█
5	█

Investigating the Ideas



Information			
Amy	20	Kent	27
Beth	21	Lisa	27
Carl	21	Mike	27
Don	23	Nan	28
Eric	24	Orin	29
Fran	25	Paul	29
Gail	26	Ray	29
Hal	26	Sara	30
Ivan	27	Ted	31
Jill	27	Val	32

Lisa colored each bar on her graph paper to show how many children had the weight given below the bar.



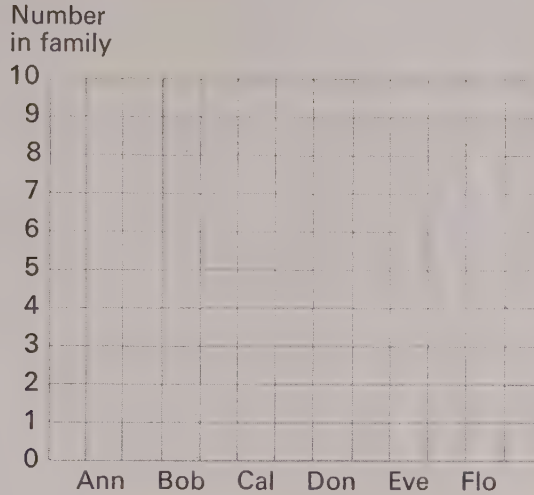
Can you tell how to make the last two bars to finish Lisa's graph?

Discussing the Ideas

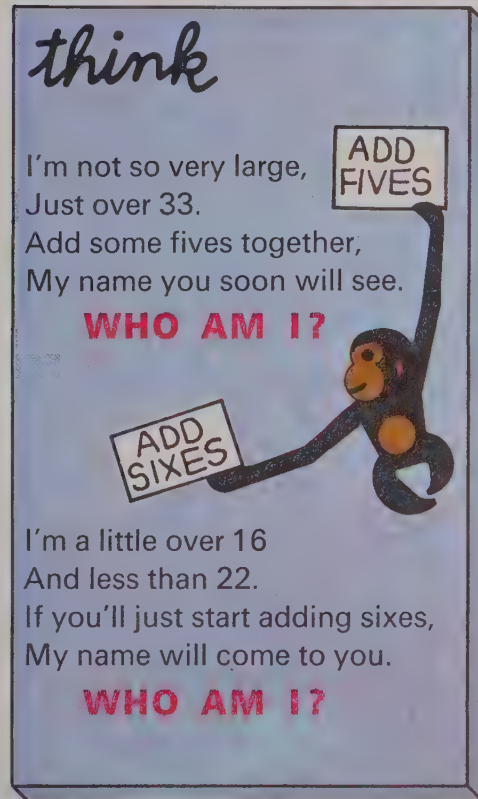
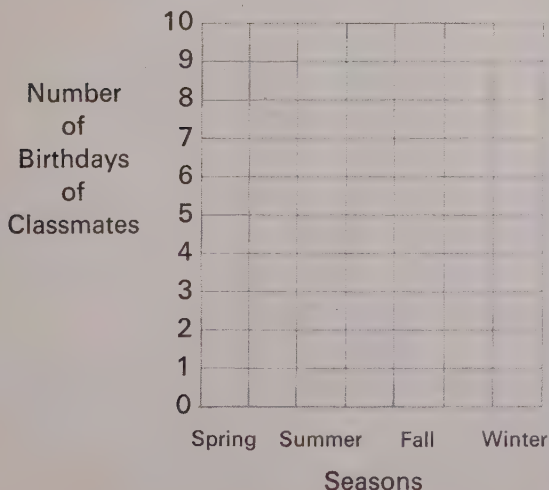
1. Do you think the bar graph is a good way to show the information about weights? Why?
2. How can you tell from the bar graph how many students weigh from 25 to 27 kilograms?
3. Collect information about the weights of children in your class. How would the bar graph for your class look?

1. Draw and color bars on graph paper to show the number of people in the family of each student.

Name	Number of people in family
Ann	4
Bob	3
Cal	5
Don	7
Eve	10
Flo	2



2. Make a bar graph like the one in exercise 1 for eight students in your class.
3. Make a bar graph using the idea suggested by the picture.



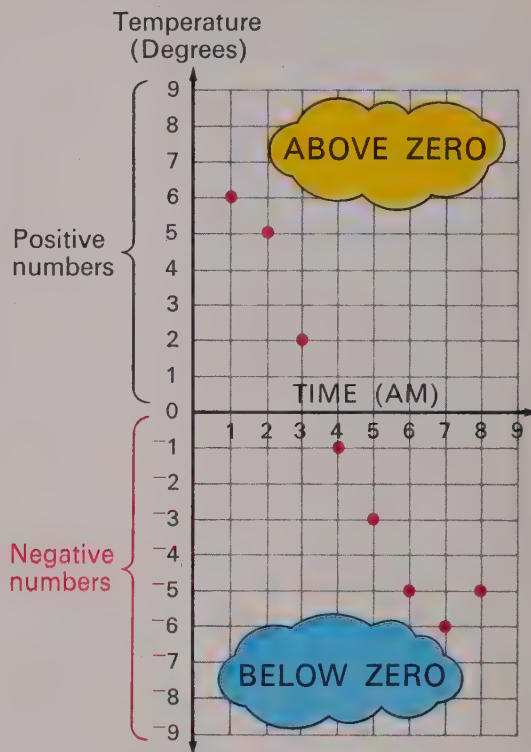
Investigating the Ideas

Alice made this graph to show the temperature from 1:00 A.M. to 8:00 A.M. on a very cold day. She used **negative** numbers to show temperatures **below** zero and positive numbers to show temperatures **above** zero.

For negative numbers, we read:

Negative one, negative two,
negative three, . . .

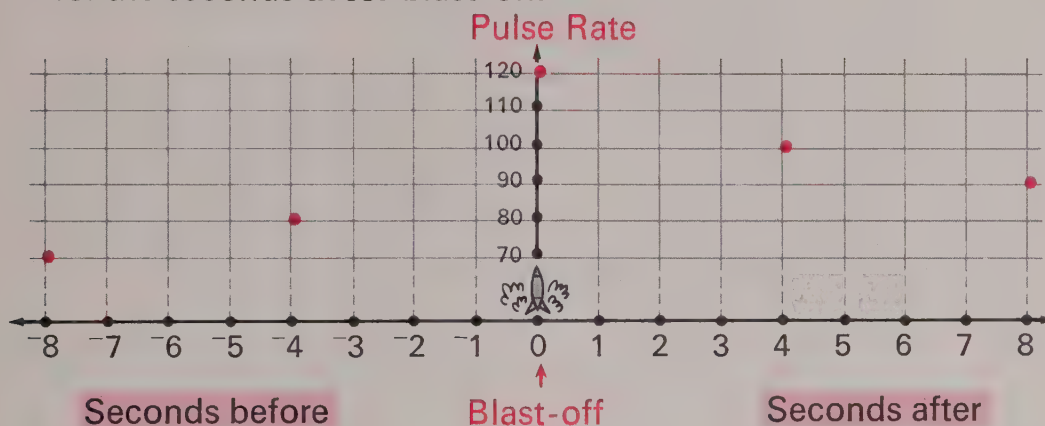
? Can you record the temperatures shown for each of the hours on the graph?



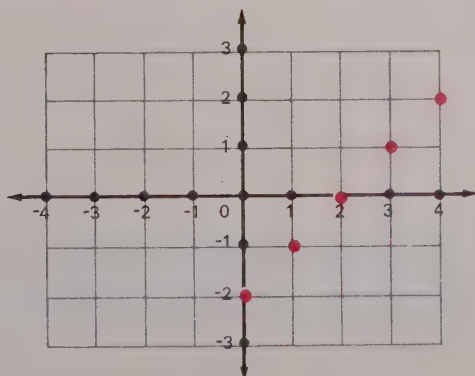
Discussing the Ideas

- What was the temperature at 1:00 A.M.?
 - What was the temperature at 2:00 A.M.?
 - When was the temperature 2 degrees?
 - What do the co-ordinates (4, -1) tell you?
 - At what time was the temperature 3 degrees below zero?
 - What is the coldest temperature shown on the graph?
 - Look at the graph and **guess** what the temperature would be at 9:00 A.M.
- Can you think of some other ways that negative numbers might be used?

- Ted made this graph to show the changes in pulse rate of an astronaut around blast-off time. He used **negative** numbers for the seconds **before** blast-off and positive numbers for the seconds **after** blast-off.



- What was the pulse rate 8 seconds before blast-off? What are the co-ordinates of that point?
 - Give the co-ordinates for the pulse rate 4 seconds before blast-off.
 - What was the pulse rate at blast-off? Give the co-ordinates of that point.
 - Give the co-ordinates for each of the other points on Ted's graph.
- Give the missing numbers in the table. The graph may help you.



Function Rule

Subtract 2

Input Output

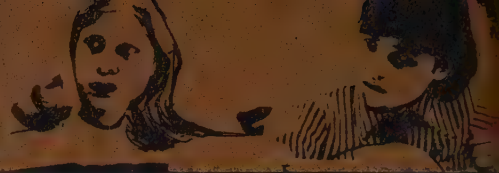
4 2

3 1

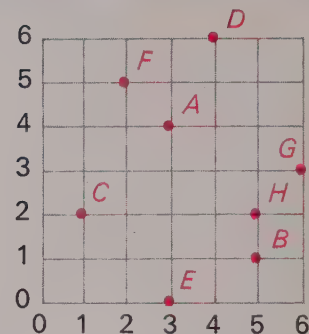
2 0

1 |||||

0 |||||



- What letter is 1 over and 2 up ?
The point lettered *G* has what co-ordinates ?
What are the co-ordinates for point *A* ?
What is the letter for the point with co-ordinates (2,5) ?
Are the co-ordinates of point *E* (3,0) or (0,3) ?

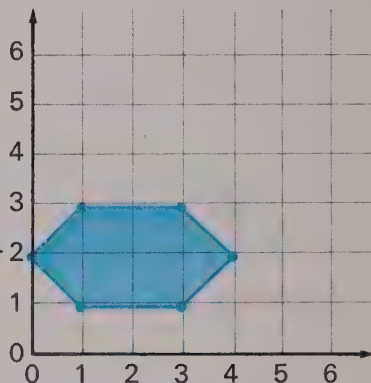


- Graph the points in the order listed and connect them to form a picture.

- (3,0) → (3,1) → (2,1) → (1,3)
→ (2,2) → (4,2) → (6,4) → (7,3)
→ (6,3) → (5,1) → (4,1) → (4,0)
- (2,0) → (2,1) → (1,3) → (2,5)
→ (2,6) → (3,5) → (4,5) → (5,6)
→ (5,5) → (6,3) → (5,1) → (5,0)

- On graph paper, show how the figure would look for each move.

- Move every point 2 over.
- Move every point 3 up.



- Complete the function tables and graph the input-output pairs.

A Function Rule

Subtract 2	
Input	Output
8	6
7	5
6	
5	
4	

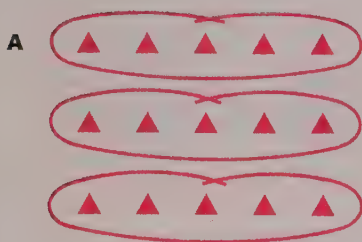
B Function Rule

Multiply by 2	
Input	Output
0	0
1	2
2	
3	
4	

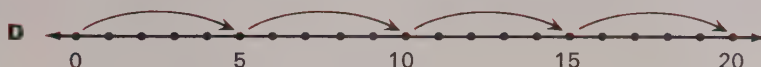
C Function Rule

Add 0	
Input	Output
1	
2	
3	
4	
5	

1. Write a multiplication equation for each exercise.



C $6 + 6 + 6 + 6 + 6$



2. Write 2 division equations for each exercise.

A $4 \times 5 = 20$

B $7 \times 9 = 63$

C $17 \times 28 = 476$

3. Find the products.

A $\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$

B $\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$

C $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$

D $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$

E $\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$

F $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$

G $\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$

H $\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$

I $\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$

J $\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$

K $\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$

L $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$

M $\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$

N $\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$

O $\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$

P $\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$

4. Find the sums and differences.

A $\begin{array}{r} 27 \\ +44 \\ \hline \end{array}$

B $\begin{array}{r} 64 \\ -31 \\ \hline \end{array}$

C $\begin{array}{r} 24 \\ +65 \\ \hline \end{array}$

D $\begin{array}{r} 64 \\ -34 \\ \hline \end{array}$

E $\begin{array}{r} 64 \\ -38 \\ \hline \end{array}$

F $\begin{array}{r} 59 \\ +63 \\ \hline \end{array}$

G $\begin{array}{r} 47 \\ +56 \\ \hline \end{array}$

H $\begin{array}{r} 93 \\ -26 \\ \hline \end{array}$

I $\begin{array}{r} 127 \\ -54 \\ \hline \end{array}$

J $\begin{array}{r} 141 \\ -95 \\ \hline \end{array}$

K $\begin{array}{r} 65 \\ -19 \\ \hline \end{array}$

L $\begin{array}{r} 48 \\ +16 \\ \hline \end{array}$



You are invited to explore


**ACTIVITY
CARD 13**
Page 315

What are some ways to think about division?

Investigating the Ideas


You can use sets, the number line, or subtraction to help you find quotients.

A Sets



38 counters
2, 4, 6, ...

B Number line



34 36 38

C Subtraction

$$\begin{array}{r} 38 \\ - 2 \\ \hline 36 \end{array}$$

$$\begin{array}{r} 36 \\ - 2 \\ \hline 34 \end{array}$$

$$\begin{array}{r} 34 \\ - 2 \\ \hline \dots \end{array}$$

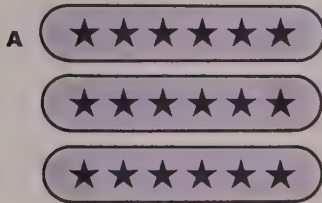

Can you use one of these methods to help you find how many twos are in 38?

Discussing the Ideas

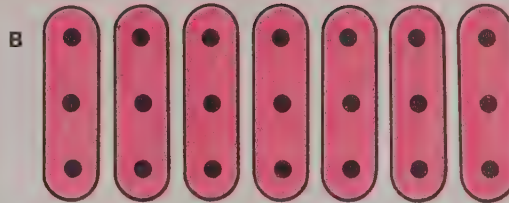
- How would you show $24 \div 6$ using method A?
- Explain how you would show $12 \div 4$ on a number line.
- Give each difference for finding $36 \div 9$ by subtraction.
- What division problem can you solve if you know the missing factor in the equation?

$$? \times 5 = 30$$

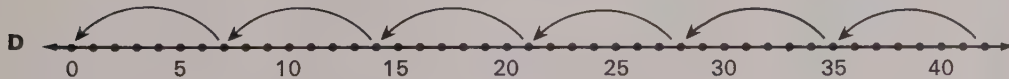
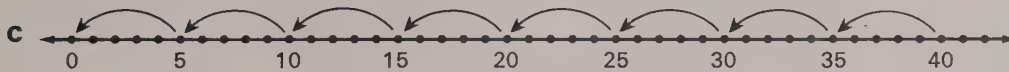
1. Write a division equation for each exercise.



18 stars



21 dots



E

$$\begin{aligned} 30 - 6 &= 24 \\ 24 - 6 &= 18 \\ 18 - 6 &= 12 \\ 12 - 6 &= 6 \\ 6 - 6 &= 0 \end{aligned}$$

F

$$\begin{aligned} 24 - 8 &= 16 \\ 16 - 8 &= 8 \\ 8 - 8 &= 0 \end{aligned}$$

G

$$\begin{aligned} 20 - 5 &= 15 \\ 15 - 5 &= 10 \\ 10 - 5 &= 5 \\ 5 - 5 &= 0 \end{aligned}$$

H $3 \times 4 = 12$

I $9 \times 8 = 72$

J $5 \times 7 = 35$

2. Find the products.

A 3×8

E 4×8

I 2×9

M 1×7

Q 1×9

B 6×7

F 0×8

J 3×7

N 6×4

R 8×3

C 5×5

G 5×4

K 5×6

O 5×9

S 9×4

D 3×9

H 6×6

L 7×3

P 4×7

T 6×8

3. Find the quotients.

A $18 \div 9$

E $42 \div 7$

I $24 \div 8$

M $24 \div 6$

Q $36 \div 4$

B $7 \div 7$

F $0 \div 8$

J $24 \div 4$

N $21 \div 7$

R $45 \div 9$

C $20 \div 4$

G $21 \div 3$

K $36 \div 6$

O $30 \div 6$

S $18 \div 2$

D $25 \div 5$

H $48 \div 6$

L $27 \div 9$

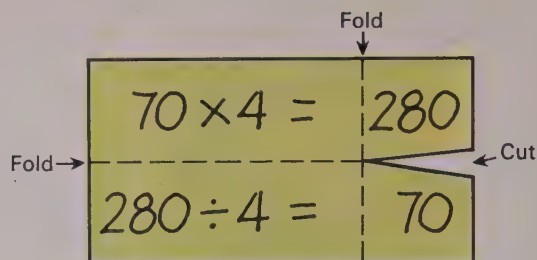
P $28 \div 7$

T $32 \div 8$

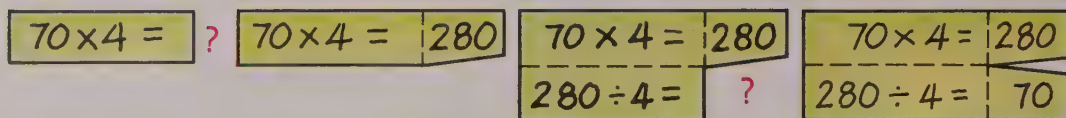
Investigating the Ideas

Use index cards or pieces of heavy paper to make cards for a Product-Quotient Quiz. Make up 8 equations like the ones shown, but with different numbers.

As one factor, use a number ending in 0, such as 70, 80, 500, or 700. For the other factor, choose from the digits 2, 3, 4, 5, 6, 7, 8, and 9. Cut and fold your 8 cards as shown.



Can you follow the directions below to quiz one of your classmates?



Question 1

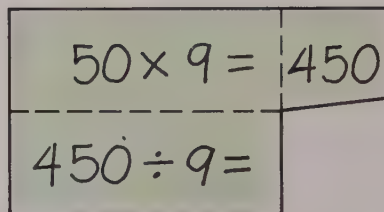
Check.

Question 2

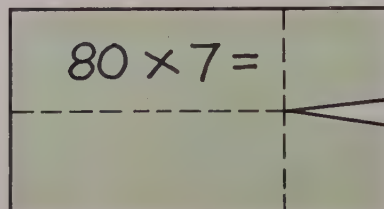
Check.

Discussing the Ideas

1. How can you use the multiplication equation to help you solve the division equation?



2. How would you complete this card?



1. Find the products.

A 5×90	E 70×6	I 9×70	M 50×7	Q 8×80
B 80×8	F 6×50	J 60×6	N 6×80	R 4×80
C 7×80	G 5×50	K 8×50	O 30×2	S 6×40
D 70×7	H 3×80	L 30×9	P 60×3	T 5×60

2. Find the quotients.

A $450 \div 5$	D $300 \div 6$	G $270 \div 9$	J $630 \div 9$
B $640 \div 8$	E $250 \div 5$	H $180 \div 3$	K $480 \div 6$
C $560 \div 7$	F $360 \div 6$	I $490 \div 7$	L $320 \div 4$

3. Find the products.

A 9×400	I 7×700
B 300×8	J 300×3
C 5×700	K 3×500
D 3×900	L 600×8
E 800×5	M 400×8
F 500×5	N 4×500
G 8×800	O 6×300
H 700×8	P 6×600

think



Now here's a simple rule
That should prove quite
a friend.

When you multiply by me,
Put two zeros on the end.

WHO AM I?

4. Find the missing factors.

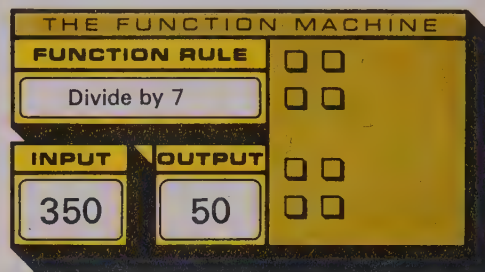
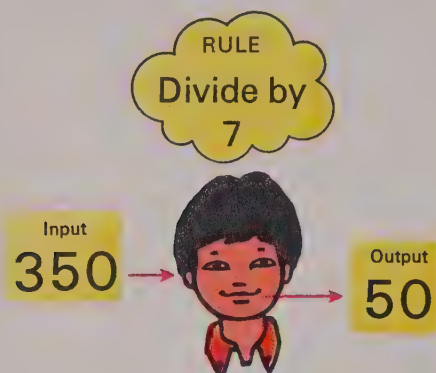
A $5 \times n = 350$	F $n \times 8 = 2400$	K $9 \times n = 450$
B $n \times 7 = 490$	G $7 \times n = 5600$	L $n \times 8 = 6400$
C $4 \times n = 200$	H $n \times 8 = 3200$	M $3 \times n = 2100$
D $n \times 6 = 420$	I $5 \times n = 4500$	N $n \times 5 = 300$
E $9 \times n = 630$	J $n \times 2 = 600$	O $6 \times n = 2400$

5. Find the quotients.

A $400 \div 8 = n$	F $600 \div 3 = n$	K $900 \div 3 = n$
B $180 \div 6 = n$	G $2400 \div 4 = n$	L $2500 \div 5 = n$
C $450 \div 5 = n$	H $3500 \div 5 = n$	M $3600 \div 6 = n$
D $560 \div 7 = n$	I $2000 \div 4 = n$	N $3000 \div 5 = n$
E $630 \div 7 = n$	J $6300 \div 9 = n$	O $4000 \div 5 = n$

What's the input, output, or rule?

Study the picture. Then give the number or function rule for each gray space in exercises 1 through 6.



1. Function Rule

Multiply by 10

	Input	Output
	15	150
A	24	
B	37	
C	48	
D		720

2. Function Rule

Multiply by 100

	Input	Output
	8	800
	23	2300
A	65	
B	83	
C		2800

3. Function Rule

A |||||

	Input	Output
	9	360
	4	160
	6	240
B	5	
C		280

4. Function Rule

Divide by 4

	Input	Output
	80	20
A	280	
B	240	
C	120	
D	200	

5. Function Rule

Divide by 3

	Input	Output
	60	20
	180	60
A	240	
B	120	
C		30

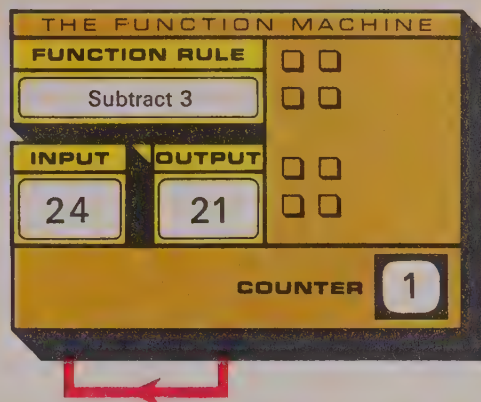
★ 6. Function Rule

A |||||

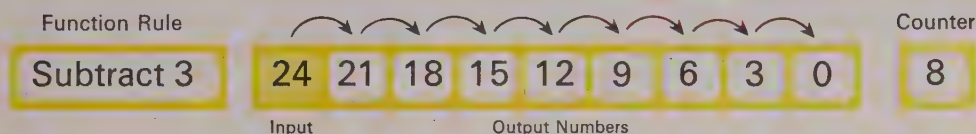
	Input	Output
	4	16
	5	25
	10	100
B	8	
C		49

Let's use a special function machine.

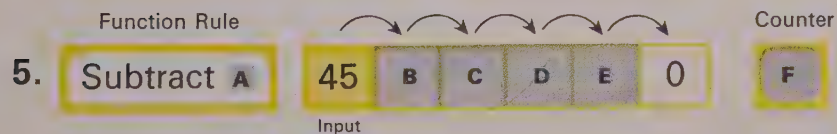
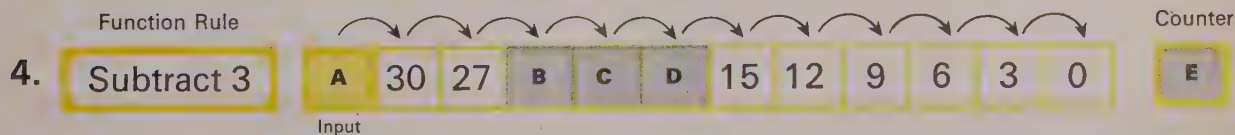
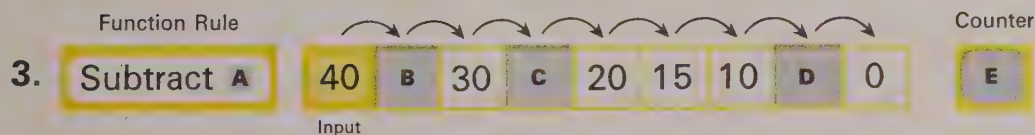
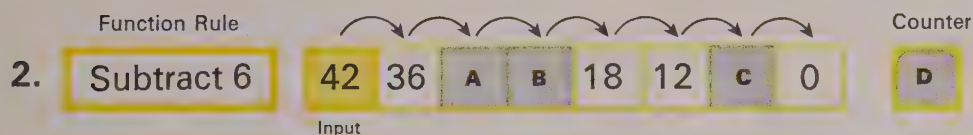
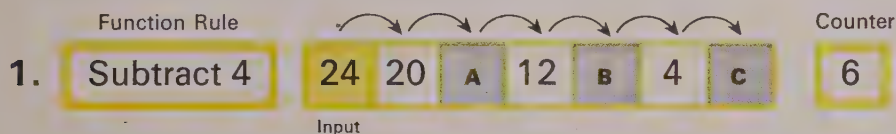
This special function machine uses the output number as a new input number and keeps operating. A counter tells how many times the rule is used.




Here is a record of the machine's operations.



Here are more records. Give what you think should go in each gray space, then write a division equation for the exercise.



1. Give the mark ($>$, $<$, $=$) that should go in each .


A 70×3  3×70

E 5×50  6×40

I 30×7  70×3

B 3×40  6×20

F 98×7  700

J 800×9  900×8

C 70×5  9×40

G 8×60  70×7

K 48×8  8×53

D 99×4  4×100

H 700×8  600×9

L 34×5  35×4

2. Find the missing factors.

A $n \times 6 = 240$

G $n \times 7 = 350$

M $3 \times n = 270$

B $n \times 4 = 240$

H $7 \times n = 420$

N $3 \times n = 120$

C $4 \times n = 320$

I $5 \times n = 400$

O $n \times 8 = 560$

D $8 \times n = 480$

J $5 \times n = 450$

P $n \times 6 = 480$

E $n \times 9 = 360$

K $n \times 7 = 210$

Q $n \times 6 = 180$

F $n \times 9 = 270$

L $n \times 6 = 300$

R $3 \times n = 150$

3. There are no whole number answers for 3 of these exercises.

List these. Then find the differences in the other exercises.

A $\begin{array}{r} 65 \\ -23 \\ \hline \end{array}$

B $\begin{array}{r} 49 \\ -26 \\ \hline \end{array}$

C $\begin{array}{r} 31 \\ -42 \\ \hline \end{array}$

D $\begin{array}{r} 548 \\ -234 \\ \hline \end{array}$

E $\begin{array}{r} 156 \\ -133 \\ \hline \end{array}$

F $\begin{array}{r} 657 \\ -756 \\ \hline \end{array}$

G $\begin{array}{r} 329 \\ -216 \\ \hline \end{array}$

H $\begin{array}{r} 254 \\ -237 \\ \hline \end{array}$

I $\begin{array}{r} 472 \\ -481 \\ \hline \end{array}$

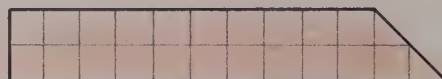
J $\begin{array}{r} 355 \\ -167 \\ \hline \end{array}$

4. Find the area of each region. The unit is .

A



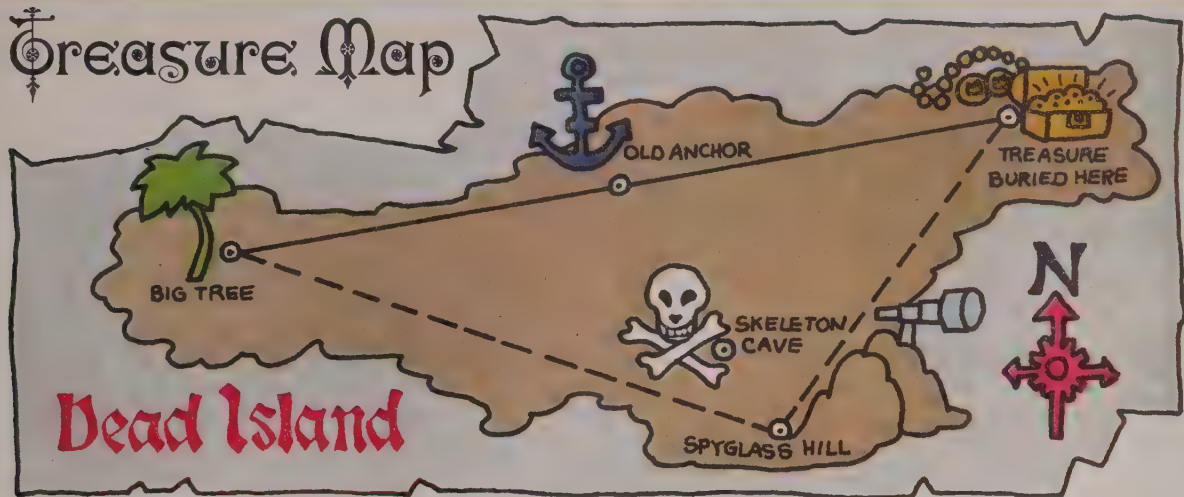
B



You are invited to explore

**ACTIVITY
CARDS 14, 15**
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Treasure Map



5. John found this map in an old trunk in his attic. One piece of paper in the trunk where the map was found looked like this.

Use scale A to answer these questions.

- A How many kilometres is it from Big Tree to Spyglass Hill ?
- B How many kilometres is it from Spyglass Hill to the treasure ?

Scale A: 1 centimetre
Each centimetre on the map means 1 kilometre on the island.

There was another scrap of paper in the trunk.

Use scale B to answer the rest of the questions.

- C How many kilometres is it from Big Tree to Spyglass Hill ?
- D How many kilometres is it from Spyglass Hill to the treasure ?
- E How many kilometres would you walk if you went from Big Tree to Spyglass Hill and then to the treasure ?
- F How many kilometres is it from Big Tree straight to the treasure ?
- G How many kilometres is it from Old Anchor straight to Skeleton Cave ?
- H How far is it from Skeleton Cave to Spyglass Hill ?
- I Which is farther from Big Tree, Spyglass Hill or the treasure ? How much farther ?

Scale B: 1 centimetre
Each centimetre on the map means 2 kilometres on the island.

Discussing the Ideas

1.

I'll subtract 1 four at a time to find out.



$$24 \div 4?$$

How many fours in 24?

Fred

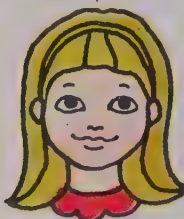
$$\begin{array}{r} 24 \\ -4 \\ \hline 20 \end{array} \rightarrow \begin{array}{r} 20 \\ -4 \\ \hline 16 \end{array} \rightarrow \begin{array}{r} 16 \\ -4 \\ \hline 12 \end{array} \rightarrow \begin{array}{r} 12 \\ -4 \\ \hline 8 \end{array} \rightarrow \begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array} \rightarrow \begin{array}{r} 4 \\ -4 \\ \hline 0 \end{array}$$

A How many fours did Fred find in 24?

B Solve: $24 \div 4 = n$

2.

I'll subtract 2 fours at a time to find how many fours are in 24.



Sandy

$$\begin{array}{r} 24 \\ -8 \\ \hline 16 \end{array} \xrightarrow{2 \text{ fours}} \begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array} \xrightarrow{2 \text{ fours}} \begin{array}{r} 8 \\ -8 \\ \hline 0 \end{array}$$

A How many fours did Sandy find in 24?

B Whose method is shorter?

3.

I can do the problem by subtracting 3 fours at a time.



Jerry

$$\begin{array}{r} 24 \\ -12 \\ \hline 12 \\ -12 \\ \hline 0 \end{array} \leftarrow 3 \text{ fours}$$

A How many fours did Jerry find in 24?

B Explain two ways Jerry's method is shorter than the others.

1. Find the differences. Then solve the division equation.

A

25	20	15	10	5
<u>-5</u>	<u>-5</u>	<u>-5</u>	<u>-5</u>	<u>-5</u>

$$25 \div 5 = n$$

B

18	15	12	9	6	3
<u>-3</u>	<u>-3</u>	<u>-3</u>	<u>-3</u>	<u>-3</u>	<u>-3</u>

$$18 \div 3 = n$$

2. Find the differences. Then solve the division equation.

A

21
<u>-7</u>
<u>-7</u>
<u>-7</u>

$$21 \div 7 = n$$

B

16
<u>-8</u>
<u>-8</u>

$$16 \div 8 = n$$

C

27
<u>-9</u>
<u>-9</u>
<u>-9</u>

$$27 \div 9 = n$$

3. Find the differences. Then solve the division equation.

A

48	
<u>-16</u> ← 2 eights	
<u>-16</u> ← 2 eights	
<u>-16</u> ← 2 eights	

$$48 \div 8 = n$$

B

35	
<u>-14</u> ← 2 sevens	
<u>-14</u> ← 2 sevens	
<u>-7</u> ← 1 seven	

$$35 \div 7 = n$$

C

30	
<u>-18</u> ← 3 sixes	
<u>-12</u> ← 2 sixes	

$$30 \div 6 = n$$

● Can larger quotients be found by subtraction?

Investigating the Ideas

Find how many threes there are in 48 by starting with 48 and subtracting as many threes as you like each time.

HOW MANY THREES

IN 48 ?

$$\begin{array}{r} 48 \\ - ? \\ \hline \end{array}$$

- ?

?

Can you find how many twos there are in 136 ?

Discussing the Ideas

<p>A</p> <p>How many twos in 34 ?</p> <p>$34 \div 2$</p>	<p>B</p> <p>How many threes in 42 ?</p> <p>$42 \div 3$</p>	<p>C</p> <p>How many fours in 60 ?</p> <p>$60 \div 4$</p>
$\begin{array}{r} 34 \\ -20 \leftarrow 10 \text{ twos} \\ \hline 14 \\ -14 \leftarrow 7 \text{ twos} \\ \hline 0 \end{array}$ <p>$34 \div 2 = n$</p>	$\begin{array}{r} 42 \\ -30 \leftarrow 10 \text{ threes} \\ \hline 12 \\ -12 \leftarrow 4 \text{ threes} \\ \hline 0 \end{array}$ <p>$42 \div 3 = n$</p>	$\begin{array}{r} 60 \\ -40 \leftarrow 10 \text{ fours} \\ \hline 20 \\ -20 \leftarrow 5 \text{ fours} \\ \hline 0 \end{array}$ <p>$60 \div 4 = n$</p>

1. What is the first step in each of the examples above?
What is the second step?
2. How can you use these two steps to find each quotient?

1. Use the subtractions to help you find each quotient.

A $36 \div 3 = n$

$$\begin{array}{r} 36 \\ -30 \leftarrow 10 \text{ threes} \\ \hline 6 \\ -6 \leftarrow 2 \text{ threes} \\ \hline 0 \end{array}$$

B $52 \div 4 = n$

$$\begin{array}{r} 52 \\ -40 \leftarrow 10 \text{ fours} \\ \hline 12 \\ -12 \leftarrow 3 \text{ fours} \\ \hline 0 \end{array}$$

C $84 \div 6 = n$

$$\begin{array}{r} 84 \\ -60 \leftarrow 10 \text{ sixes} \\ \hline 24 \\ -24 \leftarrow 4 \text{ sixes} \\ \hline 0 \end{array}$$

2. Find the differences. Then find each quotient.

A $46 \div 2 = n$

$$\begin{array}{r} 46 \\ -20 \leftarrow 10 \text{ twos} \\ \hline \text{|||||} \\ -20 \leftarrow 10 \text{ twos} \\ \hline \text{|||||} \\ -6 \leftarrow 3 \text{ twos} \\ \hline \text{|||||} \end{array}$$

B $75 \div 3 = n$

$$\begin{array}{r} 75 \\ -30 \leftarrow 10 \text{ threes} \\ \hline \text{|||||} \\ -30 \leftarrow 10 \text{ threes} \\ \hline \text{|||||} \\ -15 \leftarrow 5 \text{ threes} \\ \hline \text{|||||} \end{array}$$

C $126 \div 6 = n$

$$\begin{array}{r} 126 \\ -60 \leftarrow 10 \text{ sixes} \\ \hline \text{|||||} \\ -60 \leftarrow 10 \text{ sixes} \\ \hline \text{|||||} \\ -6 \leftarrow 1 \text{ six} \\ \hline \text{|||||} \end{array}$$

3. Find the quotients.

A $92 \div 4 = n$

B $93 \div 3 = n$

C $148 \div 4 = n$

D $78 \div 2 = n$

E $115 \div 5 = n$

F $177 \div 3 = n$

G $96 \div 8 = n$

H $185 \div 5 = n$

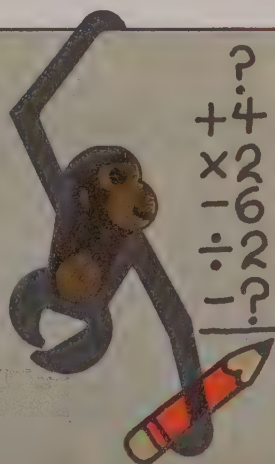
I $162 \div 6 = n$

J $224 \div 7 = n$

think

1. Pick a number.
2. Add 4.
3. Multiply by 2.
4. Subtract 6.
5. Divide by 2.
6. Subtract the number you started with.

Do you think you will always end with 1?
Try this several times.



Discussing the Ideas

- Copy each problem on paper or on the chalkboard. Subtract as many threes each time as shown by the number in the ring.

A

$96 \div 3 = n$

96
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 10 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 10 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 10 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 2 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$

B

$96 \div 3 = n$

96
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 20 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 10 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 2 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$

C

$96 \div 3 = n$

96
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 30 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$ ← 2 threes
 $\begin{array}{r} \text{|||||} \\ - \text{|||||} \\ \hline \end{array}$

Did you get 0 in the red screen each time ?

- What is the quotient for each part above ?
 - Did you get the same quotient for each part ?
 - Which way was easiest ?
 - Which way was shortest ?
- If you start with 48, can you subtract as many as
 - 10 twos ?
 - 20 twos ?
 - 30 twos ?
- How many twos in all can you subtract from 48 ?
 - What is the quotient $48 \div 2$?

1. Follow the directions. Give any missing numbers.
Then find the quotients.

A

Start with 48.



Subtract **10** threes.



Subtract **6** threes
to end with 0.

$$48 \div 3 = ?$$

B

Start with 96.



Subtract **20** fours.



Subtract **?** fours
to end with 0.

$$96 \div 4 = ?$$

C

Start with 138.



Subtract **?** sixes.



Subtract **3** sixes
to end with 0.

$$138 \div 6 = ?$$

2. Find the product. This will help you decide how many sevens
you can subtract at first when finding the quotient.
Write each quotient.

A $20 \times 7 = n$ B $50 \times 7 = n$ C $80 \times 7 = n$
 $154 \div 7 = n$ $371 \div 7 = n$ $567 \div 7 = n$

3. Find these quotients.

- A $46 \div 2$
 B $115 \div 5$
 C $155 \div 5$
 D $132 \div 4$
 E $138 \div 3$
 F $126 \div 6$
 G $224 \div 7$
 H $336 \div 8$

think



Study the first four
equations. Then solve the
last one.

$$(1 \times 9) + 2 = 11$$

$$(12 \times 9) + 3 = 111$$

$$(123 \times 9) + 4 = 1111$$

$$(1234 \times 9) + 5 = 11111$$

$$(12345 \times 9) + 6 = n$$

Solving Story Problems

- 1** 300 baseball cards.
5 on each page.
How many pages?



- 3** 96 marching-band players.
8 rows. Same number in each
row. How many in each row?



- 4** To the zoo in buses.
210 children. 7 buses.
Same number in each bus.
How many children in each bus?



- 5** 108 boys.
9 boys on each team.
How many teams?



- 6** Square dancing. 112 girls.
8 girls make a "square."
How many squares?

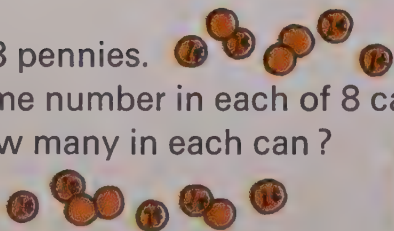
- 7** 192 trading stamps. 8 pages.
Same number on each
page. How many stamps
on each page?



- 9** 450 kilometres in 5 hours.
Same number of kilometres
each hour. How many
kilometres each hour?

- 8** 240 doll-picture cards.
6 on each page.
How many pages?

- 11** 168 pennies.
Same number in each of 8 cans.
How many in each can?



- 10** 216 pieces of candy.
6 pieces in each bag.
How many bags?

- 12** Light bulb.
Blinks 9 times each minute.
378 blinks. How many
minutes have passed?



At the Scout Camp



1. 8 Girl Guides slept in each cabin. How many cabins were used by the 56 girls from Pine City ?
2. 54 Boy Scouts went to Camp Eagle in 6 station wagons. There were the same number of scouts in each station wagon. How many went in each station wagon ?
3. There were 270 Girl Guides at Camp Sunrise. There were 9 troops of the same size. How many were in each troop ?
4. One week 208 scouts came to Camp Eagle. They lived in tents. 4 scouts slept in each tent. How many tents were used ?
5. 200 Girl Guides ate meals in a large cabin. 8 girls sat at each table. How many tables were there ?
6. 72 scouts planned to take a boating trip from Camp Eagle to Camp Sunrise. If each boat could hold 6 scouts, how many boats were needed ?



7. On July 1, a scoutmaster at Camp Eagle bought a bottle of pop for each camper. There were 540 Boy Scouts and Girl Guides at the campfire party. How many cartons of 6 bottles did he buy ?
8. During the summer 288 campers visited an Indian museum. The guide took the campers through the museum in groups of 9. How many trips did he make in all ?

1. Write a fraction that shows the part of each region that is shaded.



2. Find the products.

A $\begin{array}{r} 34 \\ \times 2 \\ \hline \end{array}$

B $\begin{array}{r} 26 \\ \times 3 \\ \hline \end{array}$

C $\begin{array}{r} 42 \\ \times 4 \\ \hline \end{array}$

D $\begin{array}{r} 37 \\ \times 5 \\ \hline \end{array}$

E $\begin{array}{r} 73 \\ \times 6 \\ \hline \end{array}$

F $\begin{array}{r} 68 \\ \times 5 \\ \hline \end{array}$

G $\begin{array}{r} 59 \\ \times 6 \\ \hline \end{array}$

H $\begin{array}{r} 74 \\ \times 7 \\ \hline \end{array}$

I $\begin{array}{r} 83 \\ \times 8 \\ \hline \end{array}$

J $\begin{array}{r} 92 \\ \times 9 \\ \hline \end{array}$

3. Answer "more than 100" or "less than 100" for each product.

A 3×33

D 4×33

G 6×20

J 11×11

B 3×34

E 5×21

H 10×9

K 9×11

C 4×22

F 5×19

I 10×11

L 9×12

4. Find the sums.

A $\begin{array}{r} 15 \\ 32 \\ 40 \\ \hline \end{array}$

B $\begin{array}{r} 62 \\ 24 \\ 46 \\ \hline \end{array}$

C $\begin{array}{r} 74 \\ 37 \\ 53 \\ \hline \end{array}$

★ 5. Find the missing digits.

A $\begin{array}{r} \text{III}5 \\ + 4\text{III} \\ \hline 81 \end{array}$

B $\begin{array}{r} \text{III}8 \\ + 3\text{III} \\ \hline 112 \end{array}$

C $\begin{array}{r} 6\text{III} \\ - \text{III}8 \\ \hline 39 \end{array}$

D $\begin{array}{r} \text{III}4 \\ - 1\text{III} \\ \hline 38 \end{array}$

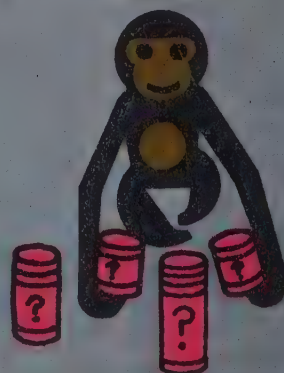
E $\begin{array}{r} \text{III}6 \\ \times 2 \\ \hline 92 \end{array}$

F $\begin{array}{r} 3\text{III} \\ \times 4 \\ \hline 148 \end{array}$

think

There were two stacks of checkers on the table. 6 checkers were removed from one stack and placed on the other.

Then the stacks had the same number of checkers. Before moving the 6 checkers, how many more did the taller stack have than the shorter one?





6. Give the missing numbers.

Examples:

\$3.47 means 3 dollars and 47 cents.

\$3.47 means 347 cents.

A \$5.39 means 5 dollars and 39 cents.

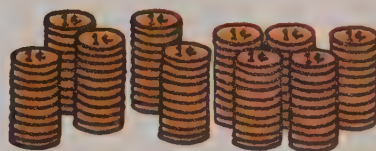
B \$3.86 means 3 dollars and 86 cents.

C \$4.23 means 4 dollars and 23 cents.

D \$7.33 means 7 dollars and 33 cents.



1 dollar
is worth
100 pennies.



7. Find the total amounts.

Example: \$1.34 and \$3.23 is \$4.57

A \$3.32 and \$2.45

C \$3.64 and \$4.58

E \$ 7.32

B \$12.57 and \$8.32

D \$8.64 and \$1.36

12.68

8. Find the difference in the amounts.

Example: $\begin{array}{r} \$4.65 \\ 3.13 \\ \hline \$1.52 \end{array}$

A $\begin{array}{r} \$5.86 \\ 2.42 \\ \hline \end{array}$

B $\begin{array}{r} \$9.47 \\ 2.13 \\ \hline \end{array}$

C $\begin{array}{r} \$8.52 \\ 3.36 \\ \hline \end{array}$

D $\begin{array}{r} \$4.38 \\ 2.53 \\ \hline \end{array}$

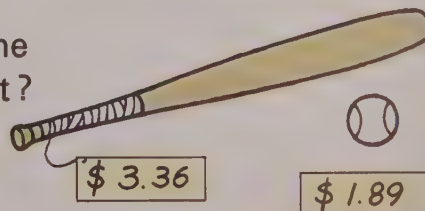
9. A Susan bought a record and a book.
The clerk wrote the costs down like this.
Find the total amount.

Record.... 3.49
Book..... 2.35
Total _____

B Susan gave the clerk 6 dollars.

How much change did she get?

C Susan had \$8.67 when she left home. She
spent \$6.34. How much did she have left?



\$ 3.36

\$ 1.89

10. Ken bought a baseball and a bat.
Find the total cost.



You are invited to explore

ACTIVITY
CARD 16
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Discussing the Ideas

John made a poster to show a new way to write division exercises.

1. Show how to write the following division equation using the new way.

$$45 \div 5 = 9$$

2. Explain what Charles did wrong on his paper.

3. Which letter—A, B, or C—represents the quotient?

$$\begin{array}{r} \boxed{B} \\ \boxed{A} \overline{) \boxed{C}} \end{array}$$

4. Fran wanted to find how many pages she would need for 78 doll pictures, if she put 3 pictures on each page. She wrote her work like this.

- A How many threes did Fran subtract the first time?
the second time?
the third time?
- B How many threes did she subtract altogether?
What is the quotient?
How many pages does she need for the doll pictures?

$$28 \div 4 = 7 \quad 4 \overline{) 28} \begin{array}{r} 7 \\ \hline \end{array}$$

We read both of these
"28 divided by 4 equals 7"

John



For $24 \div 3 = 8$
We write

$$\begin{array}{r} 3 \\ 8 \overline{) 24} \end{array}$$

Charles

$$\begin{array}{r} 26 \\ 3 \overline{) 78} \\ \underline{30} \\ 48 \\ \underline{30} \\ 18 \\ \underline{18} \\ 0 \end{array} \begin{array}{c} \textcircled{10} \\ \textcircled{10} \\ \textcircled{6} \end{array}$$

FRAN

Using the Ideas

1. Write each of these exercises using the new method.

A $12 \div 4 = 3$ B $14 \div 2 = 7$ C $48 \div 6 = 8$ D $63 \div 9 = 7$

2. Find the quotients.

A $2\overline{)6}$ B $2\overline{)14}$ C $8\overline{)24}$ D $8\overline{)40}$ E $8\overline{)56}$

F $5\overline{)25}$ G $4\overline{)16}$ H $4\overline{)32}$ I $6\overline{)36}$ J $7\overline{)56}$

3. Find the quotients.

A $2\overline{)46}$

20 (10)

26 (10)

20 (10)

6 (3)

6

0

B $5\overline{)85}$

50 (10)

35 (7)

35

0

C $4\overline{)144}$

80 (20)

64 (10)

40 (10)

24 (6)

24

0

D $3\overline{)114}$

90 (30)

24 (8)

24

0

4. Copy each exercise and give the missing numbers.

A $3\overline{)42}$

30 (?)

12 (?)

12

0

B $6\overline{)78}$

60 (?)

18 (?)

18

0

C $4\overline{)92}$

80 (?)

12 (?)

12

0

D $7\overline{)105}$

70 (?)

35 (?)

35

0

5. Find the quotients.

A $2\overline{)34}$ B $5\overline{)65}$ C $3\overline{)48}$ D $6\overline{)72}$ E $4\overline{)96}$ F $7\overline{)84}$

G $8\overline{)96}$ H $9\overline{)108}$ I $4\overline{)68}$ J $7\overline{)98}$ K $6\overline{)90}$ L $3\overline{)51}$

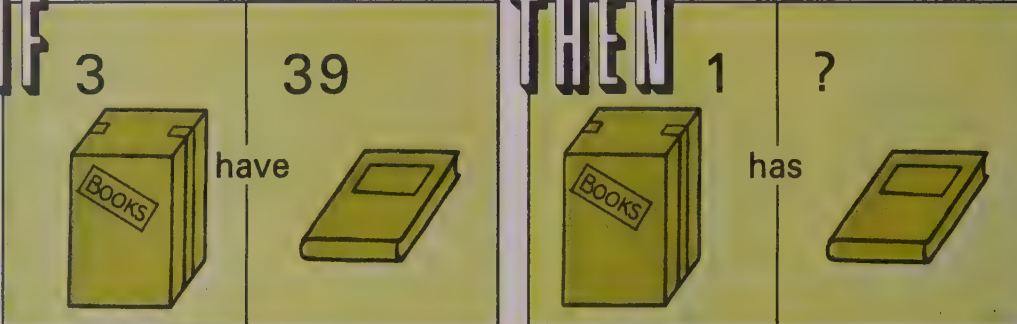
● *Let's use division to solve problems.*

Investigating the Ideas

Divide sets of counters to find the answers to these problems.

1. **IF** 3 39 **THEN** 1 ?


have has



The diagram shows two scenarios. In the 'IF' scenario, a box labeled 'BOOKS' is divided into 3 equal parts, and a book is divided into 39 equal parts. The box has 3 parts and the book has 39 parts. In the 'THEN' scenario, the box is divided into 1 part and the book is divided into ? parts.

2. **IF** 4 48 **THEN** 1 ?

cost costs



The diagram shows two scenarios. In the 'IF' scenario, a box labeled 'RICE 500 GRAMS' is divided into 4 equal parts, and a 1-cent coin is divided into 48 equal parts. The box has 4 parts and the coin has 48 parts. In the 'THEN' scenario, the box is divided into 1 part and the coin is divided into ? parts.



Can you write and complete a division problem that would help you answer the questions above?

Discussing the Ideas

1. There is a total of 54 washers in 3 boxes. Write and solve a division problem that will tell you how many washers are in each box. Why is division used to solve the problem?
2. Can you make up a problem like those above and explain how to solve it by using division?

Solve the problems.

1. **IF** 36  fill 3  **THEN** ?  fill 1 
2. **IF** 5  make 1  **THEN** 75  make ? 
3. **IF** 4  cost 184  **THEN** 1  costs ? 
4. **IF** 9  paint 27  **THEN** 1  paints ? 

think

There are 3 stacks of checkers on a table.
6 checkers were removed from 1 stack and
divided equally between the other 2 stacks.
Then all the stacks had the same number.
At the beginning, how many more checkers were
in the tall stack than in the shorter ones?



Solving Short Stories

- 1** 78 children.
9 more came later.
How many children in all?

- 3** 82 children. 37 boys. How many girls?

- 4** 315 chairs.
7 rows.
Same number
in each row.
How many
in each row?



- 5** 6 baskets.
48 kilograms
per basket.
How many
kilograms in all?



- 2** 162 children.
Same number of children
in each of 6 groups.
How many in each group?

- 6** Satellite makes
558 orbits.
9 orbits each day.
How many days?



- 7** 108 eggs.
9 cartons.
Same number
in each carton.
How many
in each carton?



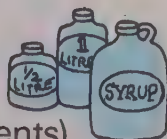
- 8** 7 days in a week. 364 days.
How many weeks?

- 9** 7 boxes weigh 112 grams.
How many grams does 1 box weigh?

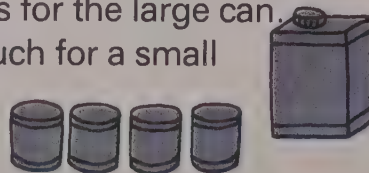


- 10** Walk 5320 metres in one hour.
How far in 2 hours?

- 11** 87 cents for 3 litres
of ice cream.
How much per litre?



- 12** 4 cans of oil in a large can.
96 cents for the large can.
How much for a small
can?



- 13** \$1.92 (192 cents)
for a jug of syrup.
4 litres in a jug.
How much for a half litre?

TIME

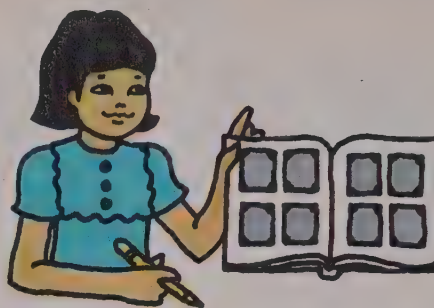


Animals, trees, birds, and insects grow old. Exercises 11 through 18 tell how old they sometimes grow.

1. 4 o'clock now. Sleep for 7 hours. What time will it be?
2. Walk a kilometre in 15 minutes. Run a kilometre in 6 minutes. How much quicker to run?
3. 60 minutes in 1 hour. 8 hours. How many minutes?
4. Machine runs 424 minutes a day. Makes one thing each 8 minutes. How many things?
5. 1 day has 24 hours. 9 days. How many hours?
6. 126 days make 9 fortnights. 1 fortnight is how many days?
7. Total sleep, 736 hours. 8 hours each day. How many days?
8. 658 days. How many weeks?
9. Turbojet goes 928 km/h (kilometres per hour). Gas-engine plane goes 527 km/h. How much faster is the jet?
10. 420 seconds. Same as 7 minutes. How many seconds in a minute?
11. An old cat: 15 years old. An old turtle: 10 times as old. How old is an old turtle?
12. An old rabbit: 6 years old. An old goose: 11 times as old. How old is an old goose?
13. An old bear: 35 years old. An old camel: 28 years old. How much older is an old bear than an old camel?
14. An old reindeer: 12 years old. An old whale: 6 times as old. How old is an old whale?
15. Spruce tree: 243 years old. Lives 339 more years. How old?
16. An old eagle: 46 years old. An old elm tree: 7 times as old. How old is an old elm tree?
17. An old elephant: 61 years old. An old cow: 24 years old. How much older is an old elephant than an old cow?
18. An old butterfly: 8 weeks old. An old housefly: 6 weeks old. How many **days** older is the old butterfly?

Discussing the Ideas

Sara had 51 photographs to put into her new photo book. She could put 4 pictures on a page. She decided to use division to find how many pages she would need.



1. When Sara divided 51 by 4, what did she get for the quotient?
2. After Sara used 12 pages of the book, how many photos would she have left?

$$\begin{array}{r}
 \text{quotient} \rightarrow 12 \\
 4 \overline{)51} \\
 \underline{40} \quad (10) \\
 11 \\
 \underline{8} \quad (2) \\
 3 \leftarrow \text{remainder}
 \end{array}$$

3. Notice that 3 is called the **remainder** and 4 the **divisor**.
 A If 4 is the divisor, could you have a remainder of 4? Explain.
 B Could you have a remainder greater than the divisor?
4. Explain this rule.

Always carry out the dividing until the remainder is less than the divisor.

5. Give the quotient, divisor, and remainder for each example. Is the remainder always less than the divisor?

A

$$\begin{array}{r}
 6 \\
 4 \overline{)26} \\
 \underline{24} \\
 2
 \end{array}$$

B

$$\begin{array}{r}
 3 \\
 7 \overline{)25} \\
 \underline{21} \\
 4
 \end{array}$$

C

$$\begin{array}{r}
 27 \\
 5 \overline{)136} \\
 \underline{100} \\
 36 \\
 \underline{35} \\
 1
 \end{array}$$

D

$$\begin{array}{r}
 45 \\
 3 \overline{)135} \\
 \underline{120} \\
 15 \\
 \underline{15} \\
 0
 \end{array}$$

1. Find the quotients and remainders.

A $3\overline{)28}$

B $4\overline{)39}$

C $5\overline{)42}$

D $6\overline{)45}$

E $7\overline{)59}$

F $8\overline{)78}$

G $9\overline{)71}$

H $4\overline{)46}$

I $3\overline{)98}$

J $7\overline{)166}$

K $4\overline{)237}$

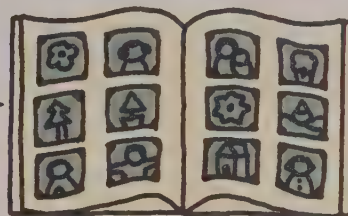
L $8\overline{)337}$

M $3\overline{)181}$

N $9\overline{)376}$

O $5\overline{)364}$

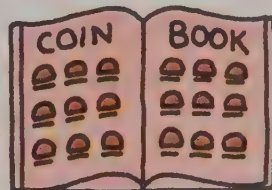
2. Susan had 57 pictures for her new album. She put 6 pictures on each page. —————→



A How many full pages could she get?

B How many pictures would be left over for the last page?




3. Jim has 221 old pennies. His coin book has room for 9 pennies on each page. —————→



A How many full pages could he get?

B How many pennies would be left over for the last page?

★ 4. Can you write and solve a division problem that will help you answer each question?

A	35 marbles	 ?	How many left over?
B	132 marbles	 ?	Less than 6 left over. How many bags? How many left over?
C	127 marbles	 ?	Less than 5 left over. How many bags? How many left over?

Investigating the Ideas

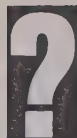
Find each product.

A $\begin{array}{r} 27 \\ \times 4 \\ \hline \end{array}$ B $\begin{array}{r} 15 \\ \times 6 \\ \hline \end{array}$ C $\begin{array}{r} 44 \\ \times 3 \\ \hline \end{array}$

D $\begin{array}{r} 34 \\ \times 7 \\ \hline \end{array}$ E $\begin{array}{r} 32 \\ \times 5 \\ \hline \end{array}$ F $\begin{array}{r} 36 \\ \times 3 \\ \hline \end{array}$

Cynthia

1. $238 \div 7 = 34$
2. $160 \div 5 = 32$
3. $108 \div 4 = 24$
4. $108 \div 3 = 34$
5. $90 \div 6 = 15$
6. $132 \div 3 = 42$



Can you use your answers to the exercises above to help you grade this paper?

Discussing the Ideas

1. Explain how Patty can use multiplication to see if she has found the quotient for $48 \div 4$.

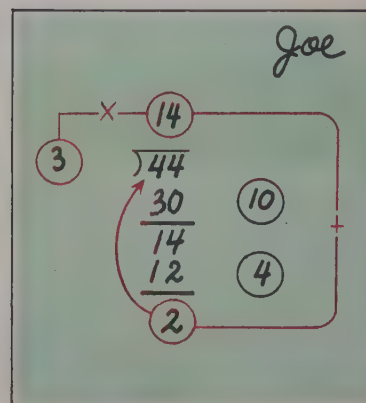
Patty

$$\begin{array}{r} 12 \\ 4 \overline{)48} \\ \underline{40} \\ 8 \\ \underline{8} \\ 0 \end{array}$$

(10) (2)

2. Joe made this poster to explain how to check division when the remainder is not zero.


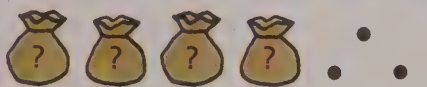
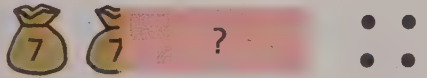




- A What is the product of 3×14 ?
- B Explain why you must **add** the remainder to this product to get 44.
- C Explain how Joe's diagram shows a way you can check division.

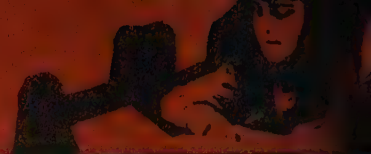


1. Find the quotients and remainders. Then check your answers.

- A** $4\overline{)25}$ **B** $5\overline{)27}$ **C** $3\overline{)10}$ **D** $6\overline{)39}$ **E** $2\overline{)19}$
F $5\overline{)37}$ **G** $6\overline{)29}$ **H** $7\overline{)65}$ **I** $4\overline{)30}$ **J** $3\overline{)29}$
K $8\overline{)206}$ **L** $6\overline{)154}$ **M** $5\overline{)276}$ **N** $7\overline{)185}$ **O** $6\overline{)134}$

2. In a given part of this exercise, each bag contains the same number of marbles. Use division to help you find the answer. Check your work.

A	161 marbles		How many in each bag ?
B	43 marbles		3 left over. How many in each bag ?
C	39 marbles		4 left over. How many bags ?
D	27 marbles		3 left over. How many in each bag ?
E	44 marbles		4 left over. How many bags ?
F	60 marbles		Less than 9 left over. How many bags ? How many left over ?
G	184 marbles		Less than 8 left over. How many bags ? How many left over ?



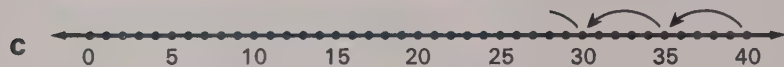
1. Write a division equation to answer each question.



How many sets of 3 are in a set of 21?



If we put 24 dots into 3 sets of the same number, how many dots are in each set?



Starting at 40, how many jumps of 5 does it take to get to 0?

D

$$\begin{array}{r} 42 \\ -7 \\ \hline 35 \end{array} \quad \begin{array}{r} 35 \\ -7 \\ \hline 28 \end{array} \quad \begin{array}{r} 28 \\ -7 \\ \hline \end{array} \dots$$

Starting with 42, how many times do we subtract 7 to get 0?

E $n \times 9 = 54$ What number times 9 gives 54?

2. Find the quotients.

Since $11 \times 23 = 253$, we know that $\begin{cases} 253 \div 23 = n \\ 253 \div 11 = n \end{cases}$

3. Find the quotients.

- | | | |
|---------------|---------------|---------------|
| A $64 \div 8$ | I $49 \div 7$ | Q $81 \div 9$ |
| B $28 \div 4$ | J $40 \div 8$ | R $18 \div 2$ |
| C $20 \div 5$ | K $48 \div 6$ | S $25 \div 5$ |
| D $18 \div 6$ | L $54 \div 6$ | T $45 \div 5$ |
| E $27 \div 9$ | M $24 \div 6$ | U $30 \div 5$ |
| F $45 \div 5$ | N $32 \div 8$ | V $36 \div 9$ |
| G $42 \div 7$ | O $56 \div 8$ | W $16 \div 4$ |
| H $36 \div 6$ | P $72 \div 9$ | X $35 \div 7$ |

think

Brian's father weighs
50 kilograms more than Brian.
Together they weigh
120 kilograms.
How much does
Brian weigh?



4. Find the quotients.

A $5 \overline{)315}$

B $6 \overline{)264}$

C $3 \overline{)228}$

D $4 \overline{)372}$

E $2 \overline{)168}$

F $4 \overline{)300}$

G $7 \overline{)700}$

H $6 \overline{)420}$

I $8 \overline{)272}$

J $9 \overline{)558}$

5. Find the quotients and the remainders.

A $3 \overline{)128}$

B $5 \overline{)342}$

C $6 \overline{)415}$

D $4 \overline{)321}$

E $2 \overline{)101}$



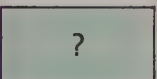

F $8 \overline{)327}$

G $9 \overline{)576}$

H $3 \overline{)194}$

I $7 \overline{)627}$

J $6 \overline{)245}$

6.	258 marbles		How many in each bag ?
7.	175 marbles		How many bags ?
8.			How many marbles ?

9. Jan had 35 balloons for her party. There were 8 children at the party. Each child got the same number of balloons, and there were 3 left over. How many balloons did each child get ?

10. Jim had 50 cents. Table tennis balls cost 9 cents each.

A How many could he buy ? How much money is left over ?

B If he bought only 3 balls, how much money would he have left ?

11. Sara had 75 cents when she went shopping.

A How many pencils could she buy if they were 6 cents each ?
How much would she have left ?

B If pencils were 9 cents each, how many could she buy ?
How much money would she have left ?

1. Find the sums, products, quotients, and differences.

A $\begin{array}{r} 94 \\ +39 \\ \hline \end{array}$

B $\begin{array}{r} 68 \\ \times 3 \\ \hline \end{array}$

C $\begin{array}{r} 78 \\ -52 \\ \hline \end{array}$

D $\begin{array}{r} 81 \\ +79 \\ \hline \end{array}$

E $\begin{array}{r} 63 \\ \times 5 \\ \hline \end{array}$

F $\begin{array}{r} 79 \\ \times 6 \\ \hline \end{array}$

G $\begin{array}{r} 27 \\ +88 \\ \hline \end{array}$

H $\begin{array}{r} 56 \\ \times 8 \\ \hline \end{array}$

I $\begin{array}{r} 65 \\ +99 \\ \hline \end{array}$

J $\begin{array}{r} 93 \\ \times 7 \\ \hline \end{array}$

K $\begin{array}{r} 142 \\ -80 \\ \hline \end{array}$

L $\begin{array}{r} 125 \\ -52 \\ \hline \end{array}$

M $65 - 23$

N $350 \div 7$

O $350 \div 5$

P $540 \div 9$

Q $120 \div 3$

2. Tell what operation (+, -, ×, ÷) you think of for:

- A putting 2 sets together and finding the total number.
- B finding how many are left after some have been taken away.
- C finding how many sets of a certain size we get from a set.
- D finding how many in a certain number of rows of the same number.
- E finding how many more one set has than another.
- F finding how many ways we can pair objects in 2 sets.
- G finding how many rows when we put a set into rows having the same number.

3. Solve the equations.

A $n + 6 = 11$

B $8 + n = 15$

C $3 \times n = 18$

D $n \times 8 = 24$

E $50 \div 5 = n$

F $8 - n = 6$

G $10 \div n = 2$

H $42 \div n = 6$

I $n - 8 = 6$

J $n \div 6 = 5$

K $18 + n = 24$

think

A train that is 1 kilometre long is travelling 1 kilometre each 3 minutes. How long does it take this train to pass through a 2-kilometre tunnel?



Solving Story Problems

- 1** Shirt costs \$4.89.
Jacket costs \$11.56.
How much less is the shirt?

- 2** 182 kilometres on Friday.
496 kilometres on Saturday.
527 kilometres on Sunday.
How far in the three days?

- 3** 128 pickles in a barrel.
4 barrels in storeroom.
How many pickles in all?



- 4** Peaches: 12 cents each.
Pears: 16 cents each.
Michael bought 7 peaches
and 9 pears. How much
did he spend?



- 5** 138 hockey cards. 6 per package. How many packages?



- 6** 513 pansies in cartons.
9 cartons.
How many pansies
per carton?



- 7** Use 9 litres
of gasoline to go
135 kilometres. How
many kilometres
travelled on each litre?

- 8** 184 tickets. 8 bundles
of the same size.
How many in each bundle?

- 9** Sixty-five 8-cent stamps.
Nine 11-cent stamps.
How much change from a 10-dollar bill?

- 10** Forty-eight 8-cent stamps.
Sixteen 10-cent stamps.
One hundred ninety-six 2-cent stamps.
How much change from a 10-dollar bill?



Eating at the Restaurant

Kay and her mother went to a restaurant in the city.

1. There were 36 tables in the restaurant.

There were 4 chairs at each table.

How many chairs were there ?

2. There were 9 waiters. How many tables might be assigned to each waiter ?

3. The waiters used 1 pitcher of water for each 4 people.
Kay counted 56 people. How many pitchers of water did they need ?

4. The waiter wrote this order for Kay and her mother. What was the total cost of their lunches ?

COUNTRY KITCHEN	
Baked Ham	\$2.25
Chicken Salad	1.55
Coffee	.20
Milk	.20
TOTAL	
THANK YOU	

5. Kay's mother gave the waiter \$4.50.
How much change did she get back ?
6. Their lunch cost about \$4.00. Kay's mother decided to tip the waiter 15 cents for each dollar that the lunch cost.
How much extra did she give the waiter for his good service ?

7. Kay saw this sign in the window. —————→
- A How many weeks has the restaurant been open without closing ?
- ★ B How many hours has it been open without closing ?

OPEN 7 DAYS A WEEK	
24 HOURS A DAY	
WE'VE BEEN OPEN	
FOR	168 DAYS
WITHOUT CLOSING	



You are invited to explore

ACTIVITY
CARD 17
Page 317

Mathematical Activities

How to Use the Activity Cards

Do you like to explore things for yourself? These Activity Cards will give you some exciting experiences with mathematics. Each card presents a different idea for you to explore. Often you will find that a card will give you ideas for additional activities on your own.



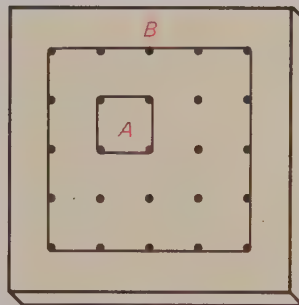
ACTIVITY CARD 1

A is the smallest **square** you can form on the geoboard with one rubber band.

B is the largest square you can form on the geoboard with one rubber band.

Six more squares of different sizes can be formed.

How many of them can you find and draw on dot paper?



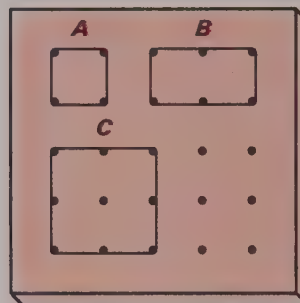
ACTIVITY CARD 2

Rubber band **A** encloses an **area** of 1 square.

Rubber band **B** encloses an area of 2 squares.

The area of **C** is 4 squares.

Can you show a **square** or a **rectangle** that has an area of 3? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15? 16?

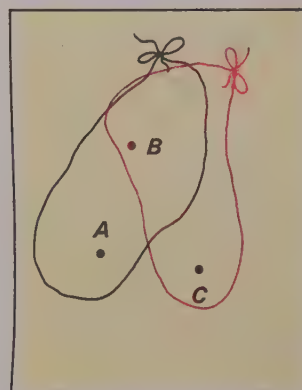


ACTIVITY CARD 3

Mark 3 points, **A**, **B**, and **C**, on a sheet of paper. Use a black and a red loop of string. In the figure, **A** and **C** are inside only one loop. **B** is inside both loops.

How many ways can you place the string so that

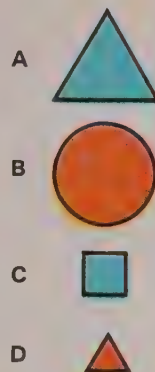
- each dot is inside some loop
- and
- exactly one dot is inside both loops?



ACTIVITY CARD 4

A and B are different in **shape** and **color**.
B and D are different in **shape** and **size**.

- In how many ways are A and C different?
- In how many ways are B and C different?
- Can you color and cut out a figure that is different from D in 3 ways?



ACTIVITY CARD 5

If you toss a penny 10 times, how many heads do you think you will get?
Try it.

Guess how many heads you will get in 100 tosses.
Now try it.

Can you predict about how many heads you would get in 1000 tosses?



ACTIVITY CARD 6

How many "SQUARES"* can you find in your class?

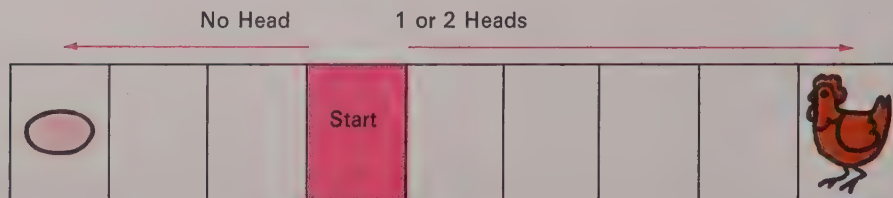
(Figure out an easy way to measure to see if a person is a "square.")



*Someone who can fit exactly inside a square

ACTIVITY CARD 7

Put a marker on **start**. Flip two pennies.
Move one space left if neither penny is a head.
Move one space right if 1 or 2 heads show.
If you keep doing this, which do you think you
will reach first, the chicken or the egg ?
Try it.



ACTIVITY CARD 8

Can you stand on a sidewalk and estimate where you will be after 100 normal steps? Try it.

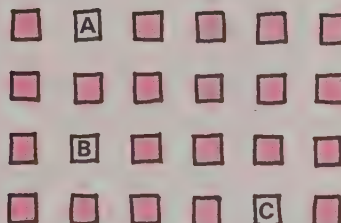
How many of your 100-step distances do you think it would take to go one kilometre?



ACTIVITY CARD 9

Suppose there are 3 empty seats in your classroom. Two new children join your class.

Can you find how many different ways your teacher could give them seats?

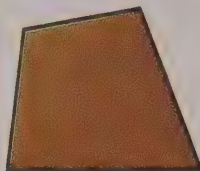


ACTIVITY CARD 10

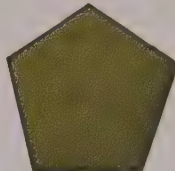
Trace these shapes and cut out ten of each.



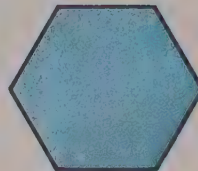
Triangle



Quadrilateral



Pentagon



Hexagon

Which of these shapes could be used to tile a floor? (The tiles must not overlap or have any space between them.)

Show each answer by pasting the ten shapes on a paper as if you were starting to tile the floor.

ACTIVITY CARD 11

Here is a way to make a 4-by-4 magic square.

Number a 4-by-4 square consecutively as in square **A**, starting with 3.

Exchange positions of the pairs of numerals connected by the arrows to get square **B**.

What is the magic sum in each row, column, and diagonal of square **B**?

Can you make your own magic square by starting with a different number?

A

3	4	5	6
7	8	9	10
11	12	13	14
15	16	17	18

B

18	4	5	15
7	13	12	10
11	9	8	14
6	16	17	3

ACTIVITY CARD 12

How many letters are on the front page of your newspaper?

Can you find a way to estimate this number of letters without actually counting them all?



ACTIVITY CARD 13

How close can you come to finding length by counting your steps?



(Practice taking a 60-cm or 90-cm step. Then choose some distances to measure and make a table like the one shown.)

Distance to measure	By counting steps	By using a ruler or tape	Difference
Room length			
Room width			

ACTIVITY CARD 14

Here is the way Richard used the telephone dial to find the sum of the letters in his name.

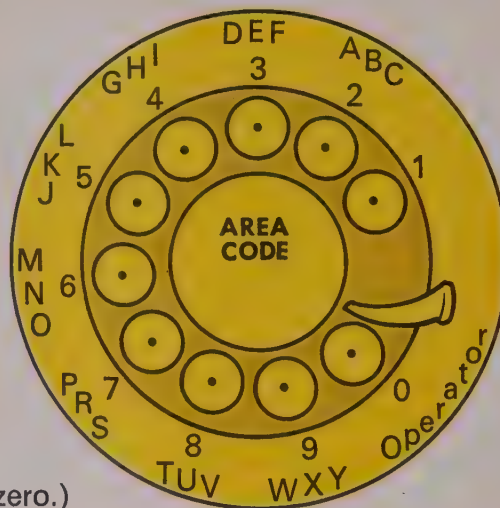
R	I	C	H	A	R	D
7	4	2	4	2	7	3

$$7 + 4 + 2 + 4 + 2 + 7 + 3 = 29$$

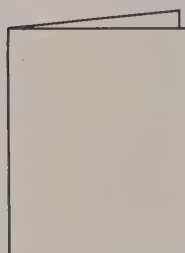
Can you find the sum for your name in this way?

Which one of your classmates has the largest sum for his name?

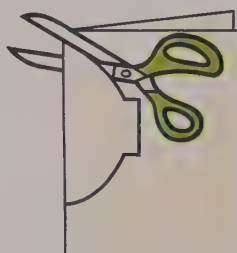
(If a name has a **Q** or **Z**, count it as zero.)



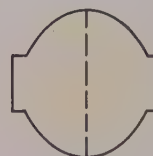
ACTIVITY CARD 15



Fold a piece of paper.



Make a cut that starts on the fold and ends on the fold.

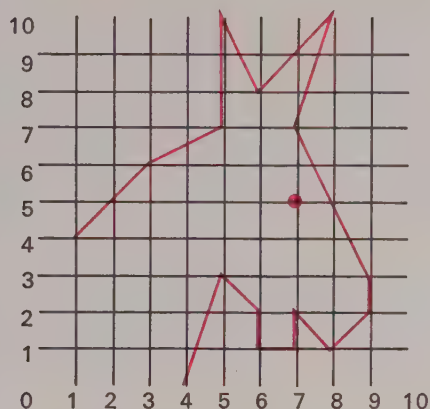


Unfold the piece you cut out. It will be **symmetric** about the fold line.

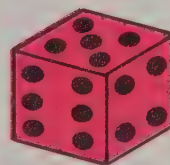
Can you use this method to make a square?
a rectangle? a heart? a triangle? a pumpkin? a letter of the alphabet? a rocket? a butterfly? a funny person?

ACTIVITY CARD 16

Can you figure out
a way to use a
rectangular sheet
of graph paper to
make a picture of
Merfel the Mule **just
like this one only larger?**



ACTIVITY CARD 17

~~1~~ 2 3 4 5 ~~6~~ · 7 8 9

Play this game with a classmate.

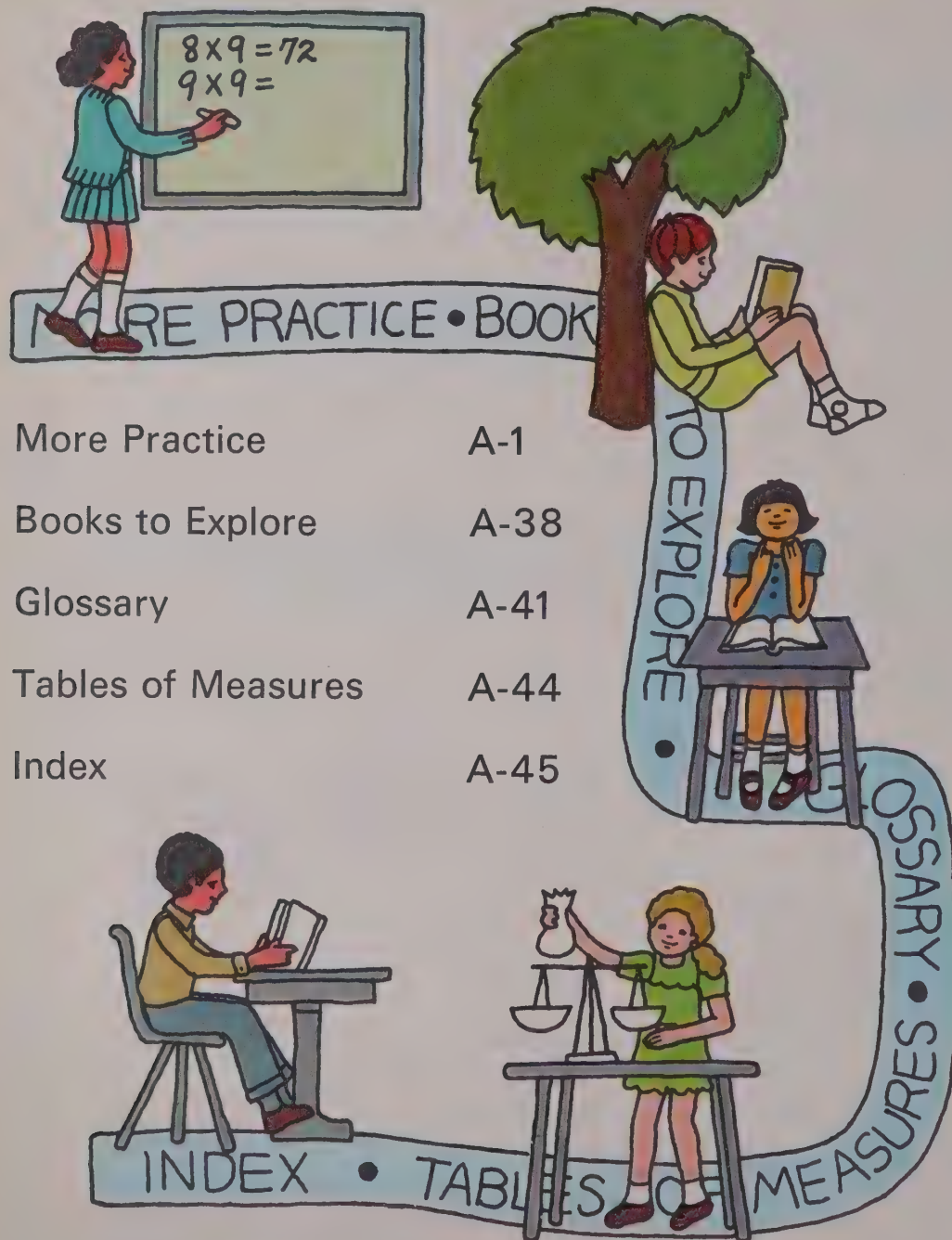
Write the numerals 1 through 9 on a piece of paper.

Toss two dice. Mark out the sum you toss. For example, if you toss a 5 and a 2, you may mark out any combination of digits that totals 7. Continue tossing the dice until you can no longer mark out the sum you toss from the remaining digits.

Your score is the sum of the digits that remain.

The person with the lower total wins.

Appendix










More Practice








Set 1

For use with page 13

Give the length of each object to the nearest centimetre.

1. 
2. 
3. 
4. 
5. 
6. 
7. 



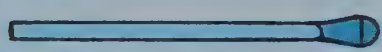

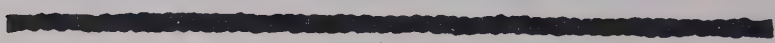

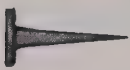
Give the length of each object to the nearest centimetre.

8. 
9. 
10. 
11. 
12. 
13. 
14. 

Reflected answers, Set 1: 1' 5" 5' 3" 8' 0" 10' 11"

Set 2*For use with page 15*







Measure each object to the nearest half centimetre.

1. 
2. 
3. 
4. 
5. 
6. 
7. 

Reflected answers, Set 2: 2N 13N 4N

Set 3*For use with page 19*

Find the area of each shaded region. Use the square as the unit.

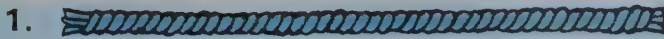
1. 
2. 
3. 
4. 
5. 
6. 

Reflected answers, Set 3: 1' 5' 5' 4

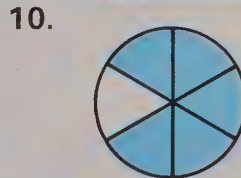
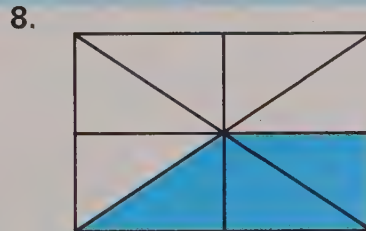
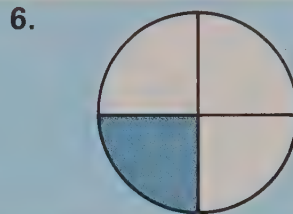
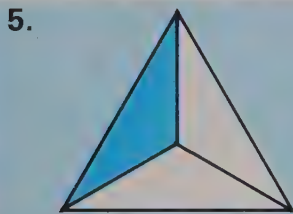
Set 4

For use with page 23

Find each length to the nearest half centimetre.



Give the fraction that tells what part of each region is shaded.



Solve each short story.

11. 4 candy bars.
Gave away $\frac{1}{2}$ of them.
How many left?

12. 6 children.
 $\frac{1}{3}$ of them are girls.
How many are girls?

13. 12 cookies.
Dropped $\frac{1}{4}$ of them.
Dropped how many?

14. 12 dimes.
Spent $\frac{1}{3}$ of them.
Spent how many?

Reflected answers, Set 4: 1. 1.5 cm, 2. 13 cm, 3. 4.5 cm, 4. 1.5 cm, 5. $\frac{1}{4}$, 6. $\frac{1}{4}$, 7. $\frac{3}{4}$, 8. $\frac{1}{2}$, 9. $\frac{4}{5}$, 10. $\frac{5}{6}$

Set 5*For use with page 31*

Write the 2-digit numeral for each of these.

1. 2 tens and 5

2. 3 tens and 6

3. 1 ten and 2

4. 4 tens and 0

5. 1 ten and 5

6. 7 tens and 3

7. 8 tens and 7

8. 4 tens and 9

9. 5 tens and 5

10. 9 tens and 0

11. 2 tens and 8

12. 8 tens and 1

Give the correct digit for each |||| .13. 21 means 2 tens and |||| .14. 37 means 3 tens and |||| .15. 89 means |||| tens and 9.16. 75 means |||| tens and 5.17. 40 means |||| tens and 0.18. 63 means 6 tens and |||| .19. 92 means 9 tens and |||| .20. 38 means |||| tens and 8.21. 56 means |||| tens and 6.22. 10 means 1 ten and |||| .

a' 22' 10' 30' 13' 1' 14' 1' 18' 3' 10' 5'

Reflected answers, Set 5: 1' 52' 5' 30' 2' 12' e' 13'

Set 6*For use with page 33*

Write the word name for each of these.

1. 5 tens and 6

2. 3 tens and 5

3. 7 tens and 0

4. 8 tens and 1

5. 1 ten and 9

6. 4 tens and 7

7. 2 tens and 8

8. 6 tens and 2

9. 1 ten and 4

10. 9 tens and 9

11. 8 tens and 6

12. 2 tens and 9

Copy each row. Give the missing numbers.

13. 7, 8, 9, 10, ?, ?, ?, ?, 15, 16

14. 25, 26, 27, 28, ?, ?, ?, ?, 33, 34

15. ?, ?, ?, ?, ?, 40, 41, 42, 43

16. 80, 81, 82, 83, ?, ?, ?, ?, 88, 89

17. 2, 4, 6, 8, ?, ?, ?, ?, 18, 20

18. 5, 10, ?, ?, ?, ?, 35, 40

14' 50' 30' 31' 35' 12' 30' 31' 38' 30'

e' forty-seven' a' fourteen' 10' ninety-nine' 13' 11' 15' 13' 14'

Reflected answers, Set 6: 1' fifty-six' 5' thirty-five' 2' nineteen'

Set 7*For use with page 37*Write the numeral. (*h* stands for *hundreds* and *t* for *tens*.)1. $5h, 3t$, and 42. $6h, 5t$, and 13. $4h, 1t$, and 94. $1h, 2t$, and 55. $3h, 8t$, and 26. $7h, 9t$, and 07. $9h, 0t$, and 38. $8h, 0t$, and 89. $2h, 5t$, and 610. $3h, 8t$, and 211. $5h, 7t$, and 012. $1h, 3t$, and 913. $7h, 9t$, and 614. $4h, 0t$, and 015. $9h, 1t$, and 516. $8h, 4t$, and 817. $2h, 2t$, and 218. $6h, 5t$, and 3

Give the missing digit.

19. 226 means 2 hundreds, ____ tens, and 6 ones.

20. 384 means 3 hundreds, 8 tens, and ____ ones.

21. 179 means ____ hundreds, 7 tens, and 9 ones.

22. 838 means ____ hundreds, 3 tens, and 8 ones.

23. 915 means 9 hundreds, ____ tens, and 5 ones.

24. 475 means 4 hundreds, 7 tens, and ____ ones.

25. 508 means 5 hundreds, ____ tens, and 8 ones.

26. 657 means ____ hundreds, 5 tens, and 7 ones.

27. 830 means 8 hundreds, 3 tens, and ____ ones.

28. 100 means ____ hundreds, 0 tens, and 0 ones.

Write the numeral for each part.

29. one hundred sixty-six

30. two hundred seventeen

31. five hundred ninety-nine

32. three hundred thirty-seven

33. eight hundred two

34. four hundred twenty-two

35. nine hundred fifty

36. seven hundred

37. one hundred ninety-three

38. nine hundred twelve

39. five hundred sixty-one

40. seven hundred forty-five

41. two hundred six

42. three hundred ninety-nine

58' 100' 30' 511' 31' 200' 30' 100' 31' 103' 38' 015
 13' 100' 14' 100' 10' 5' 50' 4' 51' 1' 55' 8' 53' 1'
 Reflected answers, Set 7: 1' 234' 5' 021' 1' 003' 8' 808'

Set 8*For use with page 41*

Write the 4-digit numeral for each of these. (*th* stands for *thousands*, *h* stands for *hundreds*, and *t* stands for *tens*.)

1. 5*th*, 3*h*, 8*t*, 5

2. 7*th*, 8*h*, 2*t*, 4

3. 9*th*, 6*h*, 1*t*, 3

4. 1*th*, 0*h*, 3*t*, 9

5. 6*th*, 4*h*, 6*t*, 7

6. 2*th*, 4*h*, 8*t*, 8

7. 3*th*, 5*h*, 9*t*, 1

8. 8*th*, 9*h*, 0*t*, 6

9. 4*th*, 9*h*, 0*t*, 0

10. 8*th*, 1*h*, 7*t*, 2

11. 2*th*, 8*h*, 1*t*, 3

12. 9*th*, 9*h*, 9*t*, 9

Find the missing digit for each of these.

13. 4872 means 4 thousands, ____ hundreds, 7 tens, 2 ones.

14. 5396 means 3 hundreds, 6 ones, 9 tens, ____ thousands.

15. 6003 means ____ hundreds, 0 tens, 6 thousands, 3 ones.

16. 9218 means 1 ten, ____ thousands, 2 hundreds, 8 ones.

8' 4800' 10' 8115' 13' 8' 14' 2

Reflected answers, Set 8: 1' 2382' 5' 1854' 2' 0401' 9' 5488'

Set 9*For use with page 43*

Which of the two numbers is greater?

1. 9 or 7

2. 12 or 20

3. 35 or 25

4. 126 or 226

5. 450 or 460

6. 796 or 790

7. 999 or 1999

8. 4921 or 4931

9. 8890 or 8889

Place the correct sign (< or >) between each pair of numbers.

10. 65  55

13. 376  476

16. 575  585

19. 2361  2351


11. 34  64


14. 581  571


17. 3092  3192

20. 8805  8905

12. 97  79

15. 783  873

18. 6426  5426

21. 4223  4333

10' 212 < 282' 11' 3085 < 3185' 18' 5321 > 5321' 50' 8802 < 8802

8' 4831' 10' 22 > 22' 11' 34 < 84' 13' 312 < 412' 14' 281 > 211'

Reflected answers, Set 9: 1' 8' 5' 50' 4' 552' 2' 420' 1' 1888'

Set 10*For use with page 55*

Find the sums.

1. $\begin{array}{r} 0 \\ +1 \\ \hline \end{array}$	2. $\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$	3. $\begin{array}{r} 0 \\ +3 \\ \hline \end{array}$	4. $\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$	5. $\begin{array}{r} 0 \\ +4 \\ \hline \end{array}$	6. $\begin{array}{r} 1 \\ +5 \\ \hline \end{array}$	7. $\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$	8. $\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$
9. $\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$	10. $\begin{array}{r} 0 \\ +2 \\ \hline \end{array}$	11. $\begin{array}{r} 7 \\ +0 \\ \hline \end{array}$	12. $\begin{array}{r} 6 \\ +1 \\ \hline \end{array}$	13. $\begin{array}{r} 0 \\ +6 \\ \hline \end{array}$	14. $\begin{array}{r} 1 \\ +7 \\ \hline \end{array}$	15. $\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$	16. $\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$
17. $\begin{array}{r} 2 \\ +6 \\ \hline \end{array}$	18. $\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$	19. $\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$	20. $\begin{array}{r} 1 \\ +8 \\ \hline \end{array}$	21. $\begin{array}{r} 2 \\ +0 \\ \hline \end{array}$	22. $\begin{array}{r} 0 \\ +5 \\ \hline \end{array}$	23. $\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$	24. $\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$
25. $\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$	26. $\begin{array}{r} 1 \\ +1 \\ \hline \end{array}$	27. $\begin{array}{r} 0 \\ +8 \\ \hline \end{array}$	28. $\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	29. $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$	30. $\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$	31. $\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$	32. $\begin{array}{r} 3 \\ +0 \\ \hline \end{array}$
33. $\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$	34. $\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$	35. $\begin{array}{r} 8 \\ +0 \\ \hline \end{array}$	36. $\begin{array}{r} 1 \\ +4 \\ \hline \end{array}$	37. $\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$	38. $\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$	39. $\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$	40. $\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$

12' 3' 10' 4'

1' 0' 8' 8' 0' 0' 10' 5' 11' 1' 15' 1' 13' 0' 14' 8'

Reflected answers, Set 10: 1' 1' 5' 8' 3' 3' 4' 3' 2' 4' 0' 0'

Set 11*For use with page 57*

Find the missing addends.

1. $\underline{\quad} + 3 = 7$

3. $\underline{\quad} + 2 = 5$

5. $\underline{\quad} + 4 = 10$

2. $\underline{\quad} + 5 = 9$

4. $\underline{\quad} + 1 = 8$

6. $\underline{\quad} + 5 = 8$

Find the differences.

7. $\begin{array}{r} 3 \\ -0 \\ \hline \end{array}$	8. $\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$	9. $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$	10. $\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$	11. $\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$	12. $\begin{array}{r} 2 \\ -2 \\ \hline \end{array}$	13. $\begin{array}{r} 2 \\ -1 \\ \hline \end{array}$	14. $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$
15. $\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$	16. $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$	17. $\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$	18. $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$	19. $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$	20. $\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$	21. $\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$	22. $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$

10' 0' 11' 1' 15' 0' 13' 1' 14' 0'

Reflected answers, Set 11: 1' 4' 3' 3' 2' 0' 1' 3' 8' 4' 0' 1'

Set 12*For use with page 59*

Find the differences.

1. $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$

2. $\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$

3. $\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$

4. $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$

5. $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$

6. $\begin{array}{r} 8 \\ -3 \\ \hline \end{array}$

7. $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$

8. $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$

9. $\begin{array}{r} 9 \\ -9 \\ \hline \end{array}$

10. $\begin{array}{r} 8 \\ -0 \\ \hline \end{array}$

11. $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$

12. $\begin{array}{r} 7 \\ -4 \\ \hline \end{array}$

13. $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$

14. $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$

15. $\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$

16. $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$

Solve each story problem.

17. Bill had 10 marbles. He gave John 6 of them.

How many marbles does Bill have left?

18. Betty is 9 years old. Her sister is 5 years old.

How much older is Betty?

19. Ann has 8 cents. Dick has 3 cents less.

How many cents does Dick have?

1' 5' 8' 5

Reflected answers, Set 12: 1' 4' 5' 1' 3' 0' 4' 3' 2' 1' 0' 2'

Set 13*For use with page 63*

Find the sums.

1. $\begin{array}{r} 4 \\ 1 \\ +2 \\ \hline \end{array}$

2. $\begin{array}{r} 2 \\ 4 \\ +3 \\ \hline \end{array}$

3. $\begin{array}{r} 1 \\ 5 \\ +2 \\ \hline \end{array}$

4. $\begin{array}{r} 2 \\ 5 \\ +3 \\ \hline \end{array}$

5. $\begin{array}{r} 3 \\ 1 \\ +0 \\ \hline \end{array}$

6. $\begin{array}{r} 6 \\ 2 \\ +2 \\ \hline \end{array}$

7. $\begin{array}{r} 5 \\ 1 \\ +2 \\ \hline \end{array}$

8. $\begin{array}{r} 3 \\ 1 \\ +6 \\ \hline \end{array}$

9. $\begin{array}{r} 6 \\ 4 \\ +3 \\ \hline \end{array}$

10. $\begin{array}{r} 6 \\ 7 \\ +3 \\ \hline \end{array}$

11. $\begin{array}{r} 9 \\ 8 \\ +1 \\ \hline \end{array}$

12. $\begin{array}{r} 2 \\ 8 \\ +7 \\ \hline \end{array}$

13. $\begin{array}{r} 5 \\ 4 \\ +5 \\ \hline \end{array}$

14. $\begin{array}{r} 6 \\ 8 \\ +2 \\ \hline \end{array}$

15. $\begin{array}{r} 1 \\ 5 \\ +9 \\ \hline \end{array}$

16. $\begin{array}{r} 8 \\ 9 \\ +2 \\ \hline \end{array}$

17. $3 + 7 + 3 + 2$

18. $7 + 5 + 3 + 2$

19. $2 + 3 + 8 + 7$

20. $1 + 7 + 9 + 5$

21. $8 + 5 + 2 + 6$

22. $4 + 9 + 6 + 8$

0' 10' 1' 8' 8' 10

Reflected answers, Set 13: 1' 1' 5' 0' 3' 8' 4' 10' 2' 1'

Set 14*For use with page 65*

Find the sums.

$$\begin{array}{r} 1. \quad 9 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 6 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 8 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 6 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 4 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 6 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 9 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 2 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 5 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 6 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 9 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 8 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 7 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 9 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 5 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 3 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 7 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 8 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 9 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 4 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 8 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 7 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad 3 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad 5 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 6 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad 4 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \quad 6 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 32. \quad 9 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 33. \quad 8 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 34. \quad 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 35. \quad 5 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 36. \quad 9 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 37. \quad 7 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 38. \quad 8 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 39. \quad 7 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 40. \quad 7 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 41. \quad 6 \\ 4 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 42. \quad 7 \\ 3 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 43. \quad 9 \\ 1 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 44. \quad 2 \\ 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 45. \quad 5 \\ 5 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 46. \quad 6 \\ 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 47. \quad 7 \\ 2 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 48. \quad 1 \\ 5 \\ +9 \\ \hline \end{array}$$

$$49. \quad 2 + 5 + 3$$

$$50. \quad 6 + 2 + 4$$

$$51. \quad 3 + 2 + 9$$

$$52. \quad 3 + 4 + 6$$

$$53. \quad 5 + 9 + 5$$

$$54. \quad 6 + 7 + 4$$

$$55. \quad 5 + 7 + 6$$

$$56. \quad 9 + 6 + 3$$

$$57. \quad 8 + 7 + 2$$

$$58. \quad 9 + 4 + 1 + 3$$

$$59. \quad 6 + 2 + 4 + 8$$

$$60. \quad 2 + 7 + 8 + 1$$

$$61. \quad 8 + 4 + 2 + 6$$

$$62. \quad 5 + 3 + 4 + 3$$

$$63. \quad 1 + 0 + 6 + 8$$

Solve each short story.

64. 9 boy's bikes. 5 girl's bikes.
How many bikes?

65. 8 robins. 9 blue jays.
How many birds?

28' 50' 20' 18'

0' 13' 1' 10' 8' 10' 48' 10' 20' 15' 24' 13' 22' 18'

Reflected answers, Set 14: 1' 11' 5' 10' 3' 11' 4' 15' 2' 15'

Find the differences.

1. $14 - 7$

2. $10 - 6$

3. $13 - 8$

4. $11 - 8$

5. $12 - 9$

6. $15 - 7$

7. $13 - 4$

8. $11 - 2$

9. $10 - 3$

10. $11 - 7$

11. $11 - 9$

12. $10 - 8$

13. $11 - 4$

14. $12 - 3$

15. $13 - 5$

16. $14 - 6$

17. $12 - 7$

18. $12 - 8$

19. $11 - 6$

20. $12 - 5$

21. $13 - 7$

22. $13 - 9$

23. $12 - 6$

24. $14 - 5$

25. $11 - 5$

26. $15 - 6$

27. $12 - 4$

28. $16 - 8$

29. $13 - 6$

30. $16 - 7$

31. $14 - 8$

32. $16 - 9$

33. $10 - 1$

34. $11 - 3$

35. $15 - 8$

36. $17 - 9$

37. $18 - 9$

38. $14 - 9$

39. $17 - 8$

40. $15 - 9$

41. $10 - 6$

45. $18 - 5$

49. $17 - 2$

53. $14 - 7$

42. $15 - 9$

46. $17 - 7$

50. $19 - 8$

54. $12 - 7$

43. $17 - 8$

47. $10 - 9$

51. $16 - 9$

55. $15 - 5$

44. $15 - 6$

48. $16 - 5$

52. $10 - 7$

56. $19 - 8$

Solve each short story.

57. 12 cats and dogs. 5 cats.
-
- How many dogs?

58. 15 candy bars. Ate 7.
-
- How many left?

59. 8 girls. 8 shoes.
-
- How many more shoes needed?

60. 14 boys. 6 hats.
-
- How many more hats needed?

61. 19 cents. Lost 7 cents.
-
- How much left?

62. 18 children. 9 boys.
-
- How many girls?

20' 11' 23' 1' 24' 2' 25' 1' 26' 8

12' 8' 16' 8' 24' 4' 32' 0' 40' 13' 48' 10' 56' 12'

1' 0' 8' 0' 0' 1' 10' 4' 11' 5' 15' 5' 13' 1' 14' 0'

Reflected answers, Set 15: 1' 1' 5' 4' 3' 2' 4' 3' 2' 3' 0' 8'

Set 16*For use with page 95*

Find the sums and differences.

1.
$$\begin{array}{r} 30 \\ +46 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 37 \\ +22 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 50 \\ +27 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 32 \\ +56 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 24 \\ +63 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 35 \\ +54 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 61 \\ +18 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 31 \\ +24 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 45 \\ +31 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 18 \\ +51 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 12 \\ +86 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 37 \\ +61 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 49 \\ +40 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 20 \\ +68 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 432 \\ +264 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 507 \\ +462 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 326 \\ +453 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 856 \\ +133 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 750 \\ +108 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 513 \\ +264 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 460 \\ -150 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 463 \\ -322 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 872 \\ -541 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 768 \\ -306 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 952 \\ -340 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 638 \\ -414 \\ \hline \end{array}$$

27.
$$\begin{array}{r} 390 \\ -240 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 576 \\ -215 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 898 \\ -344 \\ \hline \end{array}$$

30.
$$\begin{array}{r} 792 \\ -410 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 856 \\ -313 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 984 \\ -753 \\ \hline \end{array}$$

52' 015' 50' 554'

0' 80' 1' 10' 51' 310' 55' 141' 53' 331' 54' 405'

Reflected answers, Set 16: 1' 10' 5' 20' 3' 11' 4' 88' 2' 81'

Set 17*For use with page 99*

Find the sums.

1.
$$\begin{array}{r} 36 \\ +92 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 27 \\ +81 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 13 \\ +94 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 45 \\ +84 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 34 \\ +74 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 72 \\ +65 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 24 \\ +85 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 27 \\ +34 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 32 \\ +59 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 46 \\ +58 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 83 \\ +39 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 56 \\ +68 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 47 \\ +56 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 91 \\ +67 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 92 \\ +88 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 77 \\ +38 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 19 \\ +46 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 53 \\ +98 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 42 \\ +78 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 37 \\ +95 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 72 \\ +97 \\ \hline \end{array}$$

2' 108' 0' 131' 1' 100'

Reflected answers, Set 17: 1' 158' 5' 108' 3' 101' 4' 150'

Set 18*For use with page 101*

Find the sums.

1. $\begin{array}{r} 37 \\ +8 \\ \hline \end{array}$

2. $\begin{array}{r} 56 \\ +26 \\ \hline \end{array}$

3. $\begin{array}{r} 87 \\ +36 \\ \hline \end{array}$

4. $\begin{array}{r} 43 \\ +9 \\ \hline \end{array}$

5. $\begin{array}{r} 68 \\ +24 \\ \hline \end{array}$

6. $\begin{array}{r} 76 \\ +76 \\ \hline \end{array}$

7. $\begin{array}{r} 58 \\ +4 \\ \hline \end{array}$

8. $\begin{array}{r} 22 \\ +9 \\ \hline \end{array}$

9. $\begin{array}{r} 68 \\ +27 \\ \hline \end{array}$

10. $\begin{array}{r} 85 \\ +79 \\ \hline \end{array}$

11. $\begin{array}{r} 67 \\ +5 \\ \hline \end{array}$

12. $\begin{array}{r} 14 \\ +69 \\ \hline \end{array}$

13. $\begin{array}{r} 58 \\ +69 \\ \hline \end{array}$

14. $\begin{array}{r} 59 \\ +4 \\ \hline \end{array}$

15. $\begin{array}{r} 26 \\ +6 \\ \hline \end{array}$

16. $\begin{array}{r} 54 \\ +29 \\ \hline \end{array}$

17. $\begin{array}{r} 45 \\ +98 \\ \hline \end{array}$

18. $\begin{array}{r} 54 \\ +6 \\ \hline \end{array}$

19. $\begin{array}{r} 37 \\ +38 \\ \hline \end{array}$

20. $\begin{array}{r} 66 \\ +78 \\ \hline \end{array}$

21. $\begin{array}{r} 38 \\ +4 \\ \hline \end{array}$

22. $\begin{array}{r} 73 \\ +8 \\ \hline \end{array}$

23. $\begin{array}{r} 69 \\ +25 \\ \hline \end{array}$

24. $\begin{array}{r} 76 \\ +74 \\ \hline \end{array}$

25. $\begin{array}{r} 86 \\ +5 \\ \hline \end{array}$

26. $\begin{array}{r} 48 \\ +46 \\ \hline \end{array}$

27. $\begin{array}{r} 75 \\ +99 \\ \hline \end{array}$

28. $\begin{array}{r} 67 \\ +8 \\ \hline \end{array}$

29. $536 + 587$

30. $947 + 589$

31. $654 + 878$

32. $948 + 699$

33. $677 + 388$

34. $666 + 666$

35. $385 + 769$

36. $562 + 949$

37. $\begin{array}{r} 326 \\ +468 \\ \hline \end{array}$

38. $\begin{array}{r} 534 \\ +259 \\ \hline \end{array}$

39. $\begin{array}{r} 421 \\ +309 \\ \hline \end{array}$

40. $\begin{array}{r} 319 \\ +146 \\ \hline \end{array}$

41. $\begin{array}{r} 573 \\ +152 \\ \hline \end{array}$

42. $\begin{array}{r} 629 \\ +152 \\ \hline \end{array}$

43. $\begin{array}{r} 467 \\ +368 \\ \hline \end{array}$

44. $\begin{array}{r} 379 \\ +123 \\ \hline \end{array}$

45. $\begin{array}{r} 378 \\ +147 \\ \hline \end{array}$

46. $\begin{array}{r} 638 \\ +287 \\ \hline \end{array}$

47. $\begin{array}{r} 456 \\ +269 \\ \hline \end{array}$

48. $\begin{array}{r} 736 \\ +199 \\ \hline \end{array}$

49. $\begin{array}{r} 629 \\ +153 \\ \hline \end{array}$

50. $\begin{array}{r} 406 \\ +279 \\ \hline \end{array}$

51. $\begin{array}{r} 384 \\ +455 \\ \hline \end{array}$

52. $\begin{array}{r} 293 \\ +563 \\ \hline \end{array}$

53. $\begin{array}{r} 425 \\ +395 \\ \hline \end{array}$

54. $\begin{array}{r} 273 \\ +588 \\ \hline \end{array}$

55. $\begin{array}{r} 763 \\ +578 \\ \hline \end{array}$

56. $\begin{array}{r} 637 \\ +895 \\ \hline \end{array}$

57. $\begin{array}{r} 666 \\ +444 \\ \hline \end{array}$

58. $\begin{array}{r} 858 \\ +564 \\ \hline \end{array}$

59. $\begin{array}{r} 647 \\ +886 \\ \hline \end{array}$

60. $\begin{array}{r} 792 \\ +589 \\ \hline \end{array}$

61. $\begin{array}{r} 890 \\ +469 \\ \hline \end{array}$

62. $\begin{array}{r} 876 \\ +452 \\ \hline \end{array}$

63. $\begin{array}{r} 893 \\ +486 \\ \hline \end{array}$

64. $\begin{array}{r} 989 \\ +376 \\ \hline \end{array}$

65. $\begin{array}{r} 793 \\ +537 \\ \hline \end{array}$

66. $\begin{array}{r} 927 \\ +894 \\ \hline \end{array}$

31' 184' 38' 183' 38' 130' 40' 482' 41' 152' 45' 184'

e' 125' 1' 85' 58' 1153' 30' 1238' 31' 1235' 35' 1841'

Reflected answers, Set 18: 1' 42' 5' 85' 3' 153' 4' 25' 2' 85'

Set 19*For use with page 107*

Find the differences.

1. $\begin{array}{r} 32 \\ -8 \\ \hline \end{array}$

2. $\begin{array}{r} 51 \\ -9 \\ \hline \end{array}$

3. $\begin{array}{r} 36 \\ -8 \\ \hline \end{array}$

4. $\begin{array}{r} 22 \\ -5 \\ \hline \end{array}$

5. $\begin{array}{r} 47 \\ -8 \\ \hline \end{array}$

6. $\begin{array}{r} 83 \\ -9 \\ \hline \end{array}$

7. $\begin{array}{r} 91 \\ -3 \\ \hline \end{array}$

8. $\begin{array}{r} 73 \\ -27 \\ \hline \end{array}$

9. $\begin{array}{r} 41 \\ -8 \\ \hline \end{array}$

10. $\begin{array}{r} 66 \\ -7 \\ \hline \end{array}$

11. $\begin{array}{r} 84 \\ -8 \\ \hline \end{array}$

12. $\begin{array}{r} 40 \\ -2 \\ \hline \end{array}$

13. $\begin{array}{r} 73 \\ -4 \\ \hline \end{array}$

14. $\begin{array}{r} 57 \\ -8 \\ \hline \end{array}$

15. $\begin{array}{r} 30 \\ -6 \\ \hline \end{array}$

16. $\begin{array}{r} 42 \\ -15 \\ \hline \end{array}$

17. $\begin{array}{r} 75 \\ -39 \\ \hline \end{array}$

18. $\begin{array}{r} 60 \\ -54 \\ \hline \end{array}$

19. $\begin{array}{r} 34 \\ -28 \\ \hline \end{array}$

20. $\begin{array}{r} 26 \\ -17 \\ \hline \end{array}$

21. $\begin{array}{r} 58 \\ -29 \\ \hline \end{array}$

22. $\begin{array}{r} 53 \\ -18 \\ \hline \end{array}$

23. $\begin{array}{r} 71 \\ -42 \\ \hline \end{array}$

24. $\begin{array}{r} 84 \\ -29 \\ \hline \end{array}$

25. $\begin{array}{r} 36 \\ -18 \\ \hline \end{array}$

26. $\begin{array}{r} 97 \\ -49 \\ \hline \end{array}$

27. $\begin{array}{r} 86 \\ -29 \\ \hline \end{array}$

28. $\begin{array}{r} 57 \\ -28 \\ \hline \end{array}$

29. $\begin{array}{r} 82 \\ -76 \\ \hline \end{array}$

30. $\begin{array}{r} 92 \\ -66 \\ \hline \end{array}$

31. $\begin{array}{r} 63 \\ -45 \\ \hline \end{array}$

32. $\begin{array}{r} 40 \\ -29 \\ \hline \end{array}$

33. $\begin{array}{r} 81 \\ -12 \\ \hline \end{array}$

34. $\begin{array}{r} 65 \\ -39 \\ \hline \end{array}$

35. $\begin{array}{r} 88 \\ -19 \\ \hline \end{array}$

36. $\begin{array}{r} 123 \\ -29 \\ \hline \end{array}$

37. $\begin{array}{r} 164 \\ -77 \\ \hline \end{array}$

38. $\begin{array}{r} 186 \\ -98 \\ \hline \end{array}$

39. $\begin{array}{r} 152 \\ -73 \\ \hline \end{array}$

40. $\begin{array}{r} 285 \\ -37 \\ \hline \end{array}$

41. $\begin{array}{r} 636 \\ -58 \\ \hline \end{array}$

42. $\begin{array}{r} 347 \\ -59 \\ \hline \end{array}$

43. $\begin{array}{r} 153 \\ -69 \\ \hline \end{array}$

44. $\begin{array}{r} 174 \\ -89 \\ \hline \end{array}$

45. $\begin{array}{r} 216 \\ -89 \\ \hline \end{array}$

46. $\begin{array}{r} 741 \\ -53 \\ \hline \end{array}$

47. $\begin{array}{r} 580 \\ -233 \\ \hline \end{array}$

48. $\begin{array}{r} 634 \\ -126 \\ \hline \end{array}$

49. $\begin{array}{r} 727 \\ -282 \\ \hline \end{array}$

Find the missing numbers.

50. $56 - \text{||||} = 49$

55. $713 - 9 = \text{||||}$

60. $657 - 8 = \text{||||}$

51. $42 - \text{||||} = 38$

56. $675 - 7 = \text{||||}$

61. $43 - 39 = \text{||||}$

52. $73 - \text{||||} = 67$

57. $416 - \text{||||} = 414$

62. $254 - 48 = \text{||||}$

53. $139 - 4 = \text{||||}$

58. $537 - \text{||||} = 534$

63. $163 - 159 = \text{||||}$

54. $537 - 6 = \text{||||}$

59. $879 - \text{||||} = 873$

64. $442 - 39 = \text{||||}$

eJ' 4

50' 3' 51' 58' 20' 1' 21' 4' 22' 104' 22' 008' 00' 048'

e' 14' 1' 88' 12' 54' 10' 51' 11' 30' 18' 0' 10' 0'

Reflected answers, Set 19: 1' 54' 5' 45' 3' 58' 4' 11' 2' 30'

Find the sums and differences.

$$\begin{array}{r} 1. \quad 72 \\ +65 \\ \hline \end{array} \quad \begin{array}{r} 2. \quad 90 \\ +47 \\ \hline \end{array} \quad \begin{array}{r} 3. \quad 63 \\ -23 \\ \hline \end{array} \quad \begin{array}{r} 4. \quad 57 \\ +84 \\ \hline \end{array} \quad \begin{array}{r} 5. \quad 96 \\ -37 \\ \hline \end{array} \quad \begin{array}{r} 6. \quad 453 \\ +236 \\ \hline \end{array} \quad \begin{array}{r} 7. \quad 613 \\ -252 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 513 \\ +888 \\ \hline \end{array} \quad \begin{array}{r} 9. \quad 416 \\ -126 \\ \hline \end{array} \quad \begin{array}{r} 10. \quad 780 \\ +57 \\ \hline \end{array} \quad \begin{array}{r} 11. \quad 32 \\ +499 \\ \hline \end{array} \quad \begin{array}{r} 12. \quad 653 \\ -283 \\ \hline \end{array} \quad \begin{array}{r} 13. \quad 716 \\ +24 \\ \hline \end{array} \quad \begin{array}{r} 14. \quad 876 \\ +347 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 64 \\ +36 \\ \hline \end{array} \quad \begin{array}{r} 16. \quad 79 \\ -48 \\ \hline \end{array} \quad \begin{array}{r} 17. \quad 83 \\ +49 \\ \hline \end{array} \quad \begin{array}{r} 18. \quad 117 \\ -48 \\ \hline \end{array} \quad \begin{array}{r} 19. \quad 356 \\ +241 \\ \hline \end{array} \quad \begin{array}{r} 20. \quad 572 \\ -148 \\ \hline \end{array} \quad \begin{array}{r} 21. \quad 629 \\ -598 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 823 \\ +799 \\ \hline \end{array} \quad \begin{array}{r} 23. \quad 962 \\ -897 \\ \hline \end{array} \quad \begin{array}{r} 24. \quad 430 \\ +980 \\ \hline \end{array} \quad \begin{array}{r} 25. \quad 651 \\ -279 \\ \hline \end{array} \quad \begin{array}{r} 26. \quad 365 \\ +376 \\ \hline \end{array} \quad \begin{array}{r} 27. \quad 888 \\ -499 \\ \hline \end{array} \quad \begin{array}{r} 28. \quad 777 \\ +666 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 671 \\ -346 \\ \hline \end{array} \quad \begin{array}{r} 30. \quad 537 \\ +283 \\ \hline \end{array} \quad \begin{array}{r} 31. \quad 528 \\ -141 \\ \hline \end{array} \quad \begin{array}{r} 32. \quad 628 \\ +177 \\ \hline \end{array} \quad \begin{array}{r} 33. \quad 430 \\ +398 \\ \hline \end{array} \quad \begin{array}{r} 34. \quad 732 \\ -496 \\ \hline \end{array} \quad \begin{array}{r} 35. \quad 974 \\ -876 \\ \hline \end{array}$$

$$\begin{array}{r} 36. \quad 516 \\ +694 \\ \hline \end{array} \quad \begin{array}{r} 37. \quad 876 \\ +427 \\ \hline \end{array} \quad \begin{array}{r} 38. \quad 765 \\ -379 \\ \hline \end{array} \quad \begin{array}{r} 39. \quad 657 \\ -288 \\ \hline \end{array} \quad \begin{array}{r} 40. \quad 837 \\ +999 \\ \hline \end{array} \quad \begin{array}{r} 41. \quad 940 \\ -333 \\ \hline \end{array} \quad \begin{array}{r} 42. \quad 777 \\ +567 \\ \hline \end{array}$$

Solve each short story problem.

43. 16 on the bus. 14 more get on. How many on bus?

44. 59 blue marbles. 87 red marbles. How many marbles?

45. Bill weighs 45 kilograms. Mary weighs 37. How much heavier is Bill?

46. 188 math books. 275 books in all. How many are not math books?

47. There are 243 boys in Lozano School. There are 186 girls. How many more boys than girls are in the school?

50. 454, 51. 31, 43. 30, 44. 140
 0. 080, 1. 301, 12. 100, 10. 31, 11. 135, 18. 00, 10. 201,
 Reflected answers, Set 20: 1. 131, 5. 131, 3. 40, 4. 141, 2. 20

Find the total amounts.

$$\begin{array}{r} 1. \ \$1.36 \\ 7.54 \\ \hline \end{array} \quad \begin{array}{r} 2. \ \$4.25 \\ 3.57 \\ \hline \end{array} \quad \begin{array}{r} 3. \ \$3.44 \\ 5.39 \\ \hline \end{array} \quad \begin{array}{r} 4. \ \$5.65 \\ .16 \\ \hline \end{array} \quad \begin{array}{r} 5. \ \$4.37 \\ 2.91 \\ \hline \end{array} \quad \begin{array}{r} 6. \ \$7.81 \\ 1.46 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \ \$8.34 \\ 6.79 \\ \hline \end{array} \quad \begin{array}{r} 8. \ \$4.53 \\ .88 \\ \hline \end{array} \quad \begin{array}{r} 9. \ \$5.64 \\ 8.97 \\ \hline \end{array} \quad \begin{array}{r} 10. \ \$3.75 \\ 7.29 \\ \hline \end{array} \quad \begin{array}{r} 11. \ \$1.18 \\ 9.84 \\ \hline \end{array} \quad \begin{array}{r} 12. \ \$9.26 \\ 6.97 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \ \$8.36 \\ 1.26 \\ \hline \end{array} \quad \begin{array}{r} 14. \ \$3.58 \\ 5.15 \\ \hline \end{array} \quad \begin{array}{r} 15. \ \$9.46 \\ .37 \\ \hline \end{array} \quad \begin{array}{r} 16. \ \$5.61 \\ 3.09 \\ \hline \end{array} \quad \begin{array}{r} 17. \ \$6.84 \\ 2.41 \\ \hline \end{array} \quad \begin{array}{r} 18. \ \$4.72 \\ 4.92 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \ \$9.67 \\ .43 \\ \hline \end{array} \quad \begin{array}{r} 20. \ \$10.83 \\ 3.59 \\ \hline \end{array} \quad \begin{array}{r} 21. \ \$14.47 \\ 2.97 \\ \hline \end{array} \quad \begin{array}{r} 22. \ \$11.63 \\ 4.88 \\ \hline \end{array} \quad \begin{array}{r} 23. \ \$8.64 \\ 5.99 \\ \hline \end{array} \quad \begin{array}{r} 24. \ \$16.27 \\ 3.86 \\ \hline \end{array}$$

Find the difference in the amounts.

$$\begin{array}{r} 25. \ \$8.56 \\ 3.21 \\ \hline \end{array} \quad \begin{array}{r} 26. \ \$7.74 \\ 4.53 \\ \hline \end{array} \quad \begin{array}{r} 27. \ \$4.83 \\ 4.53 \\ \hline \end{array} \quad \begin{array}{r} 28. \ \$3.90 \\ 1.30 \\ \hline \end{array} \quad \begin{array}{r} 29. \ \$6.38 \\ .24 \\ \hline \end{array} \quad \begin{array}{r} 30. \ \$9.74 \\ 4.34 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \ \$6.72 \\ 1.37 \\ \hline \end{array} \quad \begin{array}{r} 32. \ \$8.65 \\ 2.26 \\ \hline \end{array} \quad \begin{array}{r} 33. \ \$9.44 \\ 7.19 \\ \hline \end{array} \quad \begin{array}{r} 34. \ \$4.36 \\ .84 \\ \hline \end{array} \quad \begin{array}{r} 35. \ \$7.29 \\ 4.93 \\ \hline \end{array} \quad \begin{array}{r} 36. \ \$6.14 \\ .39 \\ \hline \end{array}$$

Solve each story problem.

37. Jane had \$1.50. She spent 75 cents for some candy. How much did she have left?

38. George had \$7.43. He spent \$1.35 for a ball. He also spent \$3.59 for a bat. How much did he have left?

58' 20'14" 30' 22'40"

2' 21'58" 0' 28'51" 52' 22'32" 50' 23'51" 51' 20'30" 58' 25'00"

Reflected answers, Set 21: 1' 28'20" 5' 21'85" 3' 28'83" 4' 22'84"

Find the sums and differences.

1. $\begin{array}{r} 30 \\ 57 \\ +14 \\ \hline \end{array}$	2. $\begin{array}{r} 25 \\ 39 \\ +35 \\ \hline \end{array}$	3. $\begin{array}{r} 18 \\ 27 \\ +43 \\ \hline \end{array}$	4. $\begin{array}{r} 63 \\ 29 \\ +38 \\ \hline \end{array}$	5. $\begin{array}{r} 56 \\ 74 \\ +58 \\ \hline \end{array}$	6. $\begin{array}{r} 64 \\ 39 \\ +65 \\ \hline \end{array}$	7. $\begin{array}{r} 52 \\ 87 \\ +36 \\ \hline \end{array}$
---	---	---	---	---	---	---

8. $\begin{array}{r} 671 \\ -252 \\ \hline \end{array}$	9. $\begin{array}{r} 362 \\ -133 \\ \hline \end{array}$	10. $\begin{array}{r} 437 \\ -242 \\ \hline \end{array}$	11. $\begin{array}{r} 612 \\ -136 \\ \hline \end{array}$	12. $\begin{array}{r} 906 \\ -174 \\ \hline \end{array}$	13. $\begin{array}{r} 751 \\ -227 \\ \hline \end{array}$
---	---	--	--	--	--

14. $\begin{array}{r} 747 \\ -288 \\ \hline \end{array}$	15. $\begin{array}{r} 535 \\ -237 \\ \hline \end{array}$	16. $\begin{array}{r} 496 \\ -369 \\ \hline \end{array}$	17. $\begin{array}{r} 368 \\ -179 \\ \hline \end{array}$	18. $\begin{array}{r} 417 \\ -254 \\ \hline \end{array}$	19. $\begin{array}{r} 925 \\ -287 \\ \hline \end{array}$
--	--	--	--	--	--

Copy each problem. Write the missing digits.

20. $\begin{array}{r} 15\Box \\ +7\Box7 \\ \hline 893 \end{array}$	21. $\begin{array}{r} 377 \\ -26\Box \\ \hline 1\Box9 \end{array}$	22. $\begin{array}{r} \Box6\Box \\ -138 \\ \hline 722 \end{array}$	23. $\begin{array}{r} 23\Box \\ +6\Box9 \\ \hline 883 \end{array}$	24. $\begin{array}{r} \Box32 \\ -39\Box \\ \hline 140 \end{array}$	25. $\begin{array}{r} 282 \\ +\Box\Box4 \\ \hline 876 \end{array}$
--	--	--	--	--	--

26. $\begin{array}{r} 92\Box \\ +\Box78 \\ \hline 11\Box1 \end{array}$	27. $\begin{array}{r} 94\Box \\ +\Box\Box9 \\ \hline 1284 \end{array}$	28. $\begin{array}{r} \Box39 \\ -46\Box \\ \hline 477 \end{array}$	29. $\begin{array}{r} 8\Box\Box \\ +\Box94 \\ \hline 1574 \end{array}$	30. $\begin{array}{r} 7\Box3 \\ -32\Box \\ \hline 434 \end{array}$	31. $\begin{array}{r} \Box7\Box \\ +\Box64 \\ \hline 1301 \end{array}$
--	--	--	--	--	--

Solve each short story problem.

32. 72 horses. Only 28 spotted.
How many are not spotted?

33. \$9.49 for shoes. \$13.35 for dress. How much for both?

34. 128 cherry trees. 237 peach trees. How many trees?

35. 432 children. 257 boys. How many girls?

36. Lakers score 134 points. Knicks score 97. How many more points for the Lakers?

37. 246 Fords. 317 Chevrolets. 196 Plymouths. How many cars in the lot?

13' 254

0' 108' 1' 112' 8' 410' 0' 550' 10' 102' 11' 410' 15' 135'

Reflected answers, Set 22: 1' 101' 5' 00' 3' 88' 4' 130' 2' 188'

Set 23*For use with page 145*

Solve each equation.

1. $6 \times 5 = (4 \times 5) + (n \times 5)$

2. $7 \times 5 = (3 \times 5) + (n \times 5)$

3. $8 \times 6 = (5 \times 6) + (n \times 6)$

4. $8 \times 5 = (n \times 5) + (6 \times 5)$

5. $6 \times 4 = (n \times 4) + (2 \times 4)$

6. $8 \times 3 = (6 \times 3) + (n \times 3)$

7. $7 \times 6 = (n \times 6) + (3 \times 6)$

8. $7 \times 7 = (2 \times 7) + (n \times 7)$

9. $8 \times 6 = (6 \times 6) + (n \times 6)$

10. $7 \times 4 = (4 \times 4) + (n \times 4)$

11. $9 \times 5 = (6 \times 5) + (n \times 5)$

12. $9 \times 6 = (n \times 6) + (5 \times 6)$

13. Since $(3 \times 5) + (2 \times 5) = 25$, we know that $5 \times 5 = n$.

14. Since $(3 \times 6) + (4 \times 6) = 42$, we know that $7 \times 6 = n$.

Reflected answers, Set 23: 1' 5' 5' 1' 4' 8' 2' 13' 52

Set 24*For use with page 147*

Find the products.

1. 0×3

4. 2×3

7. 1×2

10. 5×2

13. 0×1

16. 0×2

2. 2×1

5. 3×2

8. 3×0

11. 3×6

14. 2×5

17. 3×7

3. 2×2

6. 3×4

9. 2×0

12. 1×0

15. 2×8

18. 6×3

Find the products.

19. $\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$

20. $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$

21. $\begin{array}{r} 0 \\ \times 2 \\ \hline \end{array}$

22. $\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$

23. $\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$

24. $\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$

25. $\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$

26. $\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$

27. $\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$

28. $\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$

29. $\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$

30. $\begin{array}{r} 0 \\ \times 0 \\ \hline \end{array}$

31. $\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$

32. $\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$

33. $\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$

34. $\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$

Solve these equations.

35. $3 \times 0 = n$

37. $3 \times 5 = n$

39. $2 \times 9 = n$

41. $8 \times 1 = n$

36. $8 \times 2 = n$

38. $7 \times 1 = n$

40. $3 \times 7 = n$

42. $4 \times 3 = n$

19' 0' 32' 0' 31' 12' 38' 18' 41' 8

Reflected answers, Set 24: 1' 0' 4' 8' 1' 5' 10' 10' 13' 0'

Set 25*For use with page 149*

Find the products.

1. 4×5

4. 7×4

7. 8×2

10. 0×5

13. 2×7

2. 2×3

5. 2×8

8. 6×4

11. 8×5

14. 7×5

3. 0×5

6. 3×7

9. 2×5

12. 0×8

15. 0×0

16. $\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$

17. $\begin{array}{r} 2 \\ \times 0 \\ \hline \end{array}$

18. $\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$

19. $\begin{array}{r} 0 \\ \times 0 \\ \hline \end{array}$

20. $\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$

21. $\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$

22. $\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$

23. $\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$

24. $\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$

25. $\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$

26. $\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$

27. $\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$

28. $\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$

29. $\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$

30. $\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$

31. $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$

Solve the equations.

32. $3 \times 5 = n$

34. $7 \times 4 = n$

36. $9 \times 4 = n$

38. $9 \times 5 = n$

33. $6 \times 5 = n$

35. $7 \times 5 = n$

37. $8 \times 5 = n$

39. $1 \times 9 = n$

Reflected answers, Set 25: 1' 50' 4' 58' 1' 18' 10' 0' 13' 14

Set 26*For use with page 151*

Find the products.

1. 5×4

6. 8×3

11. 1×5

16. 3×2

21. 5×7

2. 3×7

7. 3×4

12. 5×5

17. 1×3

22. 0×6

3. 4×8

8. 9×5

13. 6×4

18. 2×9

23. 2×7

4. 3×8

9. 4×0

14. 3×6

19. 0×5

24. 5×8

5. 7×4

10. 7×3

15. 5×1

20. 8×2

25. 4×4

Solve the equations.

26. $5 \times 8 = n$

28. $4 \times 7 = n$

30. $3 \times 9 = n$

32. $4 \times 5 = n$

27. $2 \times 0 = n$

29. $6 \times 4 = n$

31. $7 \times 1 = n$

33. $1 \times 8 = n$

15' 52' 18' 8' 11' 3' 51' 32' 55' 0

Reflected answers, Set 26: 1' 50' 5' 51' 8' 54' 1' 15' 11' 2'

Set 27*For use with page 153*

Find the products.

1. 6×7

6. 2×7

11. 8×6

16. 3×6

21. 9×6

2. 7×6

7. 5×0

12. 4×3

17. 5×5

22. 8×5

3. 7×0

8. 2×9

13. 8×7

18. 0×5

23. 5×1

4. 6×3

9. 6×1

14. 3×7

19. 3×8

24. 5×8

5. 4×8

10. 2×4

15. 0×8

20. 5×6

25. 9×7

Solve the equations.

26. $6 \times 4 = n$

28. $8 \times 7 = n$

30. $9 \times 6 = n$

32. $9 \times 7 = n$

27. $3 \times 7 = n$

29. $5 \times 6 = n$

31. $8 \times 6 = n$

33. $6 \times 5 = n$

Reflected answers, Set 27: J' 45' 9' 14' 11' 48' 16' 18' 31' 24

Set 28*For use with page 155*

Find the products.

1. 2×1

14. 5×3

27. 7×2

40. 0×6

53. 8×4

2. 2×2

15. 6×5

28. 8×1

41. 5×4

54. 0×8

3. 3×3

16. 4×6

29. 8×3

42. 5×1

55. 3×9

4. 3×4

17. 7×6

30. 0×3

43. 1×5

56. 5×8

5. 4×0

18. 9×1

31. 8×5

44. 8×2

57. 9×6

6. 4×3

19. 1×3

32. 4×8

45. 6×4

58. 1×7

7. 5×5

20. 4×2

33. 6×9

46. 2×6

59. 8×6

8. 4×4

21. 0×0

34. 1×9

47. 6×7

60. 1×6

9. 6×6

22. 2×9

35. 7×9

48. 5×6

61. 0×1

10. 8×7

23. 6×3

36. 9×8

49. 3×8

62. 8×8

11. 4×5

24. 7×3

37. 2×8

50. 3×1

63. 5×9

12. 9×0

25. 3×7

38. 5×7

51. 2×5

64. 2×4

13. 1×8

26. 7×5

39. 6×8

52. 9×2

65. 9×4

Reflected answers, Set 28: J' 5' 14' 12' 31' 14' 40' 0' 23' 35

Solve the equations.

1. $5 \times 3 = n$

9. $1 \times 6 = n$

17. $3 \times 0 = n$

25. $2 \times 6 = n$

2. $2 \times 6 = n$

10. $8 \times 6 = n$

18. $7 \times 9 = n$

26. $5 \times 9 = n$

3. $4 \times 8 = n$

11. $7 \times 7 = n$

19. $4 \times 5 = n$

27. $4 \times 4 = n$

4. $6 \times 8 = n$

12. $2 \times 9 = n$

20. $6 \times 6 = n$

28. $8 \times 0 = n$

5. $9 \times 7 = n$

13. $5 \times 8 = n$

21. $8 \times 4 = n$

29. $9 \times 5 = n$

6. $8 \times 3 = n$

14. $3 \times 4 = n$

22. $9 \times 6 = n$

30. $5 \times 5 = n$

7. $2 \times 0 = n$

15. $4 \times 9 = n$

23. $3 \times 1 = n$

31. $4 \times 0 = n$

8. $5 \times 7 = n$

16. $3 \times 3 = n$

24. $9 \times 9 = n$

32. $6 \times 8 = n$

Solve each story problem.

33. 9 boys need shoes.
How many shoes?

34. 9 horses need shoes.
How many shoes?

35. Apples: 7 cents each.
9 apples.
How much money needed?

36. Each girl has 6 dolls.
7 girls.
How many dolls?

37. Stamps: 8 cents each.
6 letters.
How much money is needed?

38. 6 pencils in a set.
4 sets.
How many pencils?

39. Each package of gum has 5 sticks. Bill has 7 packages.
How many sticks of gum does Bill have?

40. A baseball team has 9 members. There are 8 teams playing.
How many members are playing?

41. A triangle has 3 angles. Bobbie drew 7 triangles on her paper.
How many angles did she form?

18' 03" 52' 15" 50' 42" 33' 18" 34' 30"

Reflected answers, Set 29: 1' 12" 5' 15" 8' 0" 10' 48" 11' 0"

Solve the equations.

- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. $9 \times 6 = n$ | 11. $4 \times n = 20$ | 21. $n \times 5 = 25$ | 31. $n \times 9 = 45$ |
| 2. $5 \times n = 35$ | 12. $30 = 6 \times n$ | 22. $21 = 7 \times n$ | 32. $24 = 3 \times n$ |
| 3. $n \times 4 = 28$ | 13. $72 = 8 \times n$ | 23. $24 = n \times 6$ | 33. $n \times 9 = 45$ |
| 4. $n \times 5 = 0$ | 14. $56 = n \times 8$ | 24. $n \times 8 = 64$ | 34. $n \times 2 = 14$ |
| 5. $56 = 7 \times n$ | 15. $n \times 9 = 63$ | 25. $9 \times n = 72$ | 35. $48 = 6 \times n$ |
| 6. $6 \times n = 24$ | 16. $7 \times n = 49$ | 26. $n \times 9 = 54$ | 36. $n \times 3 = 27$ |
| 7. $n \times 8 = 32$ | 17. $8 \times n = 40$ | 27. $48 = n \times 6$ | 37. $4 \times n = 24$ |
| 8. $9 \times n = 36$ | 18. $7 \times 6 = n$ | 28. $7 \times n = 42$ | 38. $32 = n \times 8$ |
| 9. $8 \times n = 8$ | 19. $30 = 5 \times n$ | 29. $35 = 7 \times n$ | 39. $0 = 5 \times n$ |
| 10. $n \times 3 = 21$ | 20. $n \times 7 = 28$ | 30. $8 \times n = 0$ | 40. $35 = 7 \times n$ |

Solve each story problem.

41. Candy bars are packed in bags of 6. Janet bought 8 bags. How many bars did she buy?
42. Children are seated in groups of 8. There are 9 groups in the library. How many children are in the library?
43. Pete colored 7 designs. Each design has 6 parts. How many parts did Pete color?
44. There are 4 litres in each jug. Mother bought 3 jugs of milk. How many litres of milk did she buy?
45. Betty put pictures in a book. She put 5 on each page. She used 9 pages. How many pictures did she put in her book?
46. Bill has 8 nickels and 7 pennies. How much does he have?

55' 3' 31' 2' 35' 8' 41' 49'

Reflected answers, Set 30: 1' 24' 5' 1' 11' 2' 15' 2' 31' 2'

Make sets of dots to help answer each of the following.
Then solve each equation.

1. How many sets of 4 are
in a set of 12?

$$12 \div 4 = n$$

2. How many sets of 3 are
in a set of 6?

$$6 \div 3 = n$$

3. How many sets of 5 are
in a set of 30?

$$30 \div 5 = n$$

4. How many sets of 7 are
in a set of 21?

$$21 \div 7 = n$$

Solve the equations. Use number lines to help.

5. $24 \div 6 = n$

9. $15 \div 3 = n$

13. $27 \div 9 = n$

17. $30 \div 10 = n$

6. $12 \div 2 = n$

10. $48 \div 8 = n$

14. $14 \div 7 = n$

18. $20 \div 2 = n$

7. $40 \div 5 = n$

11. $48 \div 6 = n$

15. $36 \div 9 = n$

19. $54 \div 9 = n$

8. $16 \div 4 = n$

12. $18 \div 3 = n$

16. $24 \div 8 = n$

20. $56 \div 7 = n$

Solve each story problem.

21. 24 children.

4 in each group.

How many groups?

22. 32 marbles.

4 in each circle.

How many circles?

23. 35 cents.

5 cents for each boy.

How many boys?

24. 28 dolls.

7 in each box.

How many boxes?

25. There are 48 cars in the parking lot. The cars are
parked in rows of 8. How many rows in the lot?

Set 32*For use with page 179*

Find the quotients. Use multiplication to check your answers.

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 1. $8 \div 4 = n$ | 11. $0 \div 5 = n$ | 21. $16 \div 8 = n$ | 31. $45 \div 5 = n$ |
| 2. $12 \div 4 = n$ | 12. $9 \div 1 = n$ | 22. $14 \div 2 = n$ | 32. $24 \div 8 = n$ |
| 3. $36 \div 6 = n$ | 13. $64 \div 8 = n$ | 23. $10 \div 2 = n$ | 33. $12 \div 6 = n$ |
| 4. $27 \div 9 = n$ | 14. $18 \div 3 = n$ | 24. $54 \div 6 = n$ | 34. $4 \div 4 = n$ |
| 5. $7 \div 7 = n$ | 15. $36 \div 4 = n$ | 25. $63 \div 7 = n$ | 35. $35 \div 7 = n$ |
| 6. $30 \div 5 = n$ | 16. $10 \div 5 = n$ | 26. $56 \div 8 = n$ | 36. $16 \div 2 = n$ |
| 7. $24 \div 6 = n$ | 17. $54 \div 9 = n$ | 27. $81 \div 9 = n$ | 37. $49 \div 7 = n$ |
| 8. $12 \div 2 = n$ | 18. $32 \div 4 = n$ | 28. $9 \div 3 = n$ | 38. $42 \div 6 = n$ |
| 9. $27 \div 3 = n$ | 19. $28 \div 7 = n$ | 29. $0 \div 3 = n$ | 39. $64 \div 8 = n$ |
| 10. $56 \div 8 = n$ | 20. $24 \div 4 = n$ | 30. $36 \div 6 = n$ | 40. $15 \div 3 = n$ |

55' 1' 31' 8' 35' 3

Reflected answers, Set 32: 1' 5' 5' 3' 11' 0' 15' 8' 51' 5'

Set 33*For use with page 185*

Find the products.

- | | | | |
|---------------------|---------------------|---------------------|----------------------|
| 1. $6 \times 5 = n$ | 4. $4 \times 6 = n$ | 7. $9 \times 8 = n$ | 10. $3 \times 3 = n$ |
| 2. $8 \times 3 = n$ | 5. $1 \times 8 = n$ | 8. $2 \times 1 = n$ | 11. $4 \times 8 = n$ |
| 3. $2 \times 7 = n$ | 6. $9 \times 7 = n$ | 9. $0 \times 6 = n$ | 12. $7 \times 6 = n$ |

Find the missing factors.

- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 13. $5 \times n = 20$ | 16. $9 \times n = 72$ | 19. $7 \times n = 7$ | 22. $n \times 8 = 56$ |
| 14. $n \times 3 = 18$ | 17. $4 \times n = 32$ | 20. $n \times 3 = 21$ | 23. $1 \times n = 12$ |
| 15. $n \times 0 = 0$ | 18. $n \times 5 = 40$ | 21. $n \times 9 = 54$ | 24. $3 \times n = 12$ |

Find the quotients.

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 25. $16 \div 8 = n$ | 29. $0 \div 2 = n$ | 33. $24 \div 3 = n$ | 37. $81 \div 9 = n$ |
| 26. $12 \div 6 = n$ | 30. $4 \div 1 = n$ | 34. $8 \div 2 = n$ | 38. $18 \div 2 = n$ |
| 27. $72 \div 8 = n$ | 31. $63 \div 7 = n$ | 35. $14 \div 7 = n$ | 39. $6 \div 6 = n$ |
| 28. $21 \div 7 = n$ | 32. $48 \div 6 = n$ | 36. $16 \div 4 = n$ | 40. $64 \div 8 = n$ |

10' 8' 10' 1' 55' 1' 52' 5' 50' 0' 33' 8' 31' 8

Reflected answers, Set 33: 1' 30' 4' 54' 1' 15' 10' 8' 13' 4'

Find the missing factors and quotients.

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 1. $27 \div 3 = n$ | 11. $7 = n \div 3$ | 21. $n = 36 \div 4$ | 31. $28 \div n = 4$ |
| 2. $48 \div n = 6$ | 12. $72 \div n = 8$ | 22. $n \div 3 = 8$ | 32. $n \div 3 = 4$ |
| 3. $n \div 4 = 4$ | 13. $3 = 21 \div n$ | 23. $30 \div n = 6$ | 33. $48 \div n = 8$ |
| 4. $72 \div 8 = n$ | 14. $81 \div n = 9$ | 24. $40 \div n = 5$ | 34. $81 \div n = 9$ |
| 5. $n = 63 \div 7$ | 15. $40 \div 8 = n$ | 25. $5 = 15 \div n$ | 35. $n = 63 \div 9$ |
| 6. $48 \div 8 = n$ | 16. $n \div 7 = 3$ | 26. $n \div 8 = 0$ | 36. $n \div 6 = 9$ |
| 7. $32 \div n = 4$ | 17. $20 \div 4 = n$ | 27. $42 \div 7 = n$ | 37. $72 \div n = 8$ |
| 8. $n \div 9 = 5$ | 18. $n = 42 \div 6$ | 28. $9 \div n = 9$ | 38. $7 = 35 \div n$ |
| 9. $n \div 7 = 7$ | 19. $n \div 6 = 4$ | 29. $56 \div 8 = n$ | 39. $n = 12 \div 2$ |
| 10. $54 \div n = 6$ | 20. $72 \div n = 9$ | 30. $n = 24 \div 4$ | 40. $64 \div n = 8$ |

Solve each story problem.

- | | |
|--|--|
| 41. 18 coins.
9 in each set.
How many sets? | 42. 24 coins.
8 sets.
How many in each set? |
| 43. 48 cookies.
8 trays.
How many on each tray? | 44. 42 Girl Guides.
7 cars.
How many in each car? |
| 45. 72 books.
8 for each boy.
How many boys? | 46. 32 cents.
Carton: 4 cents.
How many cartons? |
| 47. Bill put his hockey cards into stacks of 4.
Bill has 36 cards. How many stacks does he have? | |

55' 54' 31' 1' 35' 15' 41' 5' 45' 3

Reflected answers, Set 34: 1' 0' 5' 8' 11' 51' 15' 0' 51' 0'

Find the quotients.

- | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1. $2 \div 2$ | 18. $3 \div 3$ | 35. $7 \div 7$ | 52. $3 \div 1$ | 69. $5 \div 1$ |
| 2. $6 \div 3$ | 19. $64 \div 8$ | 36. $4 \div 2$ | 53. $48 \div 8$ | 70. $8 \div 1$ |
| 3. $16 \div 4$ | 20. $35 \div 7$ | 37. $9 \div 3$ | 54. $5 \div 5$ | 71. $4 \div 4$ |
| 4. $9 \div 1$ | 21. $12 \div 2$ | 38. $1 \div 1$ | 55. $7 \div 1$ | 72. $36 \div 4$ |
| 5. $14 \div 2$ | 22. $49 \div 7$ | 39. $21 \div 7$ | 56. $24 \div 8$ | 73. $40 \div 5$ |
| 6. $6 \div 2$ | 23. $48 \div 6$ | 40. $63 \div 7$ | 57. $42 \div 7$ | 74. $16 \div 2$ |
| 7. $2 \div 1$ | 24. $15 \div 5$ | 41. $12 \div 3$ | 58. $21 \div 3$ | 75. $0 \div 5$ |
| 8. $42 \div 6$ | 25. $72 \div 8$ | 42. $25 \div 5$ | 59. $30 \div 6$ | 76. $40 \div 8$ |
| 9. $63 \div 9$ | 26. $4 \div 1$ | 43. $20 \div 5$ | 60. $27 \div 3$ | 77. $36 \div 9$ |
| 10. $32 \div 4$ | 27. $24 \div 3$ | 44. $56 \div 8$ | 61. $24 \div 4$ | 78. $14 \div 7$ |
| 11. $24 \div 6$ | 28. $32 \div 8$ | 45. $16 \div 8$ | 62. $18 \div 9$ | 79. $12 \div 6$ |
| 12. $36 \div 6$ | 29. $30 \div 6$ | 46. $20 \div 4$ | 63. $28 \div 7$ | 80. $72 \div 8$ |
| 13. $8 \div 2$ | 30. $6 \div 1$ | 47. $15 \div 3$ | 64. $10 \div 5$ | 81. $72 \div 9$ |
| 14. $18 \div 2$ | 31. $56 \div 7$ | 48. $0 \div 1$ | 65. $9 \div 9$ | 82. $30 \div 5$ |
| 15. $6 \div 6$ | 32. $28 \div 4$ | 49. $18 \div 6$ | 66. $35 \div 5$ | 83. $81 \div 9$ |
| 16. $18 \div 3$ | 33. $8 \div 8$ | 50. $45 \div 9$ | 67. $54 \div 6$ | 84. $8 \div 4$ |
| 17. $27 \div 9$ | 34. $12 \div 4$ | 51. $10 \div 2$ | 68. $0 \div 9$ | 85. $48 \div 8$ |

Solve each story problem.

86. How many pennies equal 7 nickels?
87. How many weeks are 49 days?
88. Alice drew several triangles. She counted 27 angles.
How many triangles did she draw?

10' 8' 11' 1

50' 2' 32' 1' 39' 5' 31' 3' 25' 3' 23' 0' 24' 1' 00' 2'

Reflected answers, Set 35: 1' 1' 5' 5' 3' 4' 18' 1' 18' 8'

Solve each equation.

- | | | | |
|--------------------|---------------------|---------------------|---------------------|
| 1. $28 \div 4 = n$ | 10. $32 \div n = 8$ | 19. $n \div 3 = 4$ | 28. $48 \div n = 6$ |
| 2. $n = 54 \div 6$ | 11. $49 \div 7 = n$ | 20. $27 \div n = 3$ | 29. $n \div 8 = 5$ |
| 3. $n \div 6 = 6$ | 12. $63 \div n = 9$ | 21. $6 = n \div 6$ | 30. $16 \div n = 4$ |
| 4. $5 = 40 \div n$ | 13. $54 \div n = 6$ | 22. $48 \div 6 = n$ | 31. $n \div 2 = 10$ |
| 5. $25 \div 5 = n$ | 14. $n = 7 \div 7$ | 23. $n \div 8 = 1$ | 32. $42 \div n = 7$ |
| 6. $n = 72 \div 9$ | 15. $n \div 6 = 5$ | 24. $28 \div n = 4$ | 33. $63 \div n = 7$ |
| 7. $7 = 49 \div n$ | 16. $n \div 4 = 7$ | 25. $54 \div 9 = n$ | 34. $15 \div n = 5$ |
| 8. $35 \div 5 = n$ | 17. $n = 36 \div 4$ | 26. $40 \div 8 = n$ | 35. $n \div 2 = 4$ |
| 9. $16 \div n = 2$ | 18. $56 \div n = 7$ | 27. $n = 30 \div 5$ | 36. $n \div 3 = 9$ |

Solve each story problem.

- | | |
|---|--|
| 37. 42 dots.
6 sets.
How many in each set? | 38. 24 dots.
6 in each set.
How many sets? |
| 39. 27 plants.
3 rows.
How many plants per row? | 4. 16 dogs.
2 dogs per kennel.
How many kennels? |
| 41. Passengers flying in a 707 airplane sit in rows of 6.
48 passengers can sit in the "no smoking" section.
How many rows have "no smoking"? | |
| 42. The book store is having an 8¢ sale on 10¢ tablets.
Shelly has 56¢. How many tablets can she buy? | |
| 43. How many 6-bottle cartons are needed to pack 54 bottles? | |

50' 8' 58' 8' 58' 40' 31' 1' 38' 4'
 Reflected answers, Set 36: 1' 1' 5' 8' 10' 4' 11' 1' 18' 15'

Tell whether the sentence is true (T) or false (F).

1. 16 is a multiple of 8.
2. 9 is a factor of 18.
3. 4 is a factor of 6.
4. 3 is a factor of 12.
5. 7 is a prime number.
6. 12 is a multiple of 6.
7. 10 is a multiple of 3.
8. 15 is a prime number.
9. 0 is a multiple of 6.
10. 0 is a factor of 6.
11. 35 is a prime number.
12. 54 is a multiple of 8.
13. 9 is a factor of both 36 and 72.
14. 42 is a multiple of both 7 and 5.
15. A prime number has more than two factors.
16. 18 has exactly 6 factors.
17. 24 is a multiple of 3, 6, and 8.
18. 40 is a multiple of 0, 10, 20, and 40.

Complete the sentence.

19. Since $5 \times 8 = 40$, 5 and 8 are _____ of 40.
20. Since $6 \times 9 = 54$, 54 is a multiple of 6 and _____.
21. The first 5 multiples of 9 are _____.
22. The factors of 4 and 8 are _____.
23. The first 3 multiples of both 2 and 3 are _____.
24. The factors of 37 are _____.
25. The multiples of 6 between 20 and 40 are _____.
26. The prime numbers between 20 and 30 are _____.
27. The factors of 36 that are between 10 and 20 are _____.

Find the value in cents.

- | | | | | |
|-------------|-------------|-------------|--------------|--------------|
| 1. 3 dimes | 4. 18 dimes | 7. 32 dimes | 10. 1 dime | 13. 67 dimes |
| 2. 7 dimes | 5. 25 dimes | 8. 85 dimes | 11. 75 dimes | 14. 51 dimes |
| 3. 12 dimes | 6. 11 dimes | 9. 91 dimes | 12. 0 dimes | 15. 87 dimes |

Solve the equations.

- | | | |
|--|--|-------------------------|
| 16. $(20 \times 10) + (3 \times 10) = n$ | 20. $(70 \times 10) + (5 \times 10) = n$ | |
| 17. $(60 \times 10) + (4 \times 10) = n$ | 21. $(40 \times 10) + (6 \times 10) = n$ | |
| 18. $(30 \times 10) + (7 \times 10) = n$ | 22. $(10 \times 10) + (9 \times 10) = n$ | |
| 19. $(80 \times 10) + (1 \times 10) = n$ | 23. $(90 \times 10) + (2 \times 10) = n$ | |
| 24. $18 \times 10 = n$ | 31. $77 \times 10 = n$ | 38. $10 \times n = 120$ |
| 25. $24 \times 10 = n$ | 32. $31 \times 10 = n$ | 39. $50 \times n = 500$ |
| 26. $37 \times 10 = n$ | 33. $10 \times 11 = n$ | 40. $n \times 22 = 220$ |
| 27. $7 \times 10 = n$ | 34. $10 \times 89 = n$ | 41. $36 \times n = 360$ |
| 28. $97 \times 10 = n$ | 35. $10 \times 63 = n$ | 42. $10 \times n = 270$ |
| 29. $48 \times 10 = n$ | 36. $10 \times n = 90$ | 43. $n \times 10 = 570$ |
| 30. $21 \times 10 = n$ | 37. $n \times 10 = 40$ | 44. $n \times 10 = 970$ |

Find the products.

- | | | | |
|--------------------|--------------------|---------------------|---------------------|
| 45. 9×10 | 54. 8×10 | 63. 34×10 | 72. 65×100 |
| 46. 7×10 | 55. 10×7 | 64. 52×10 | 73. 100×73 |
| 47. 10×8 | 56. 6×10 | 65. 65×10 | 74. 32×10 |
| 48. 10×0 | 57. 10×4 | 66. 20×10 | 75. 10×58 |
| 49. 2×10 | 58. 0×10 | 67. 53×10 | 76. 36×10 |
| 50. 10×6 | 59. 3×10 | 68. 10×81 | 77. 58×10 |
| 51. 1×10 | 60. 12×10 | 69. 40×10 | 78. 76×10 |
| 52. 14×10 | 61. 15×10 | 70. 10×80 | 79. 10×40 |
| 53. 10×16 | 62. 10×18 | 71. 38×100 | 80. 62×10 |

94' 250' 15' 2200' 13' 1300
 31' 110' 38' 15' 42' 20' 42' 10' 24' 80' 22' 10' 23' 340'
 13' 2100' 18' 530' 11' 240' 50' 120' 51' 420' 54' 180'
 Reflected answers, Set 38: 1' 300' 4' 1800' 1' 3500' 10' 100'

Set 39*For use with page 231*

Find the products.

- | | | | |
|-------------------|-------------------|-------------------|----------------------|
| 1. 3×40 | 13. 80×6 | 25. 3×20 | 37. 90×5 |
| 2. 60×4 | 14. 60×6 | 26. 7×60 | 38. 60×9 |
| 3. 50×9 | 15. 8×60 | 27. 30×9 | 39. 70×5 |
| 4. 8×70 | 16. 7×70 | 28. 6×30 | 40. 90×9 |
| 5. 2×30 | 17. 80×8 | 29. 5×80 | 41. 275×10 |
| 6. 8×50 | 18. 90×6 | 30. 6×60 | 42. 10×832 |
| 7. 20×9 | 19. 8×20 | 31. 8×90 | 43. 653×10 |
| 8. 7×30 | 20. 90×7 | 32. 5×60 | 44. 10×976 |
| 9. 4×80 | 21. 4×50 | 33. 70×8 | 45. 8345×10 |
| 10. 50×6 | 22. 70×3 | 34. 80×7 | 46. 8×100 |
| 11. 9×90 | 23. 60×8 | 35. 4×90 | 47. 100×9 |
| 12. 4×70 | 24. 7×90 | 36. 4×50 | 48. 18×100 |

52' 80' 58' 450' 31' 420' 38' 240

Reflected answers, Set 39: 1' 150' 5' 540' 13' 480' 14' 360'

Set 40*For use with page 239*

Solve the equations.

- | | |
|---|--|
| 1. $5 \times 18 = (5 \times 10) + (5 \times n)$ | 13. $(4 \times 20) + (4 \times 2) = n$ |
| 2. $7 \times 16 = (7 \times n) + (7 \times 6)$ | 14. $(5 \times 20) + (5 \times 9) = n$ |
| 3. $4 \times 22 = (4 \times 20) + (4 \times n)$ | 15. $(3 \times 30) + (3 \times 8) = n$ |
| 4. $8 \times 27 = (8 \times n) + (8 \times 7)$ | 16. $(8 \times 30) + (8 \times 2) = n$ |
| 5. $6 \times 35 = (6 \times 30) + (6 \times n)$ | 17. $(7 \times 60) + (7 \times 1) = n$ |
| 6. $9 \times 42 = (9 \times n) + (9 \times 2)$ | 18. $(6 \times 50) + (6 \times 7) = n$ |
| 7. $7 \times 53 = (7 \times 50) + (7 \times n)$ | 19. $(4 \times 70) + (4 \times 6) = n$ |
| 8. $2 \times 83 = (2 \times n) + (2 \times 3)$ | 20. $(9 \times 40) + (9 \times 7) = n$ |
| 9. $3 \times 75 = (3 \times 70) + (3 \times n)$ | 21. $(2 \times 90) + (2 \times 7) = n$ |
| 10. $9 \times 62 = (9 \times n) + (9 \times 2)$ | 22. $(7 \times 80) + (7 \times 8) = n$ |
| 11. $(5 \times 10) + (5 \times 3) = n$ | 23. $(8 \times 60) + (8 \times 7) = n$ |
| 12. $(6 \times 10) + (6 \times 8) = n$ | 24. $(9 \times 90) + (9 \times 3) = n$ |

14' 142' 12' 114'

Reflected answers, Set 40: 1' 8' 5' 10' 3' 5' 13' 88'

Find the products.

1. $\begin{array}{r} 32 \\ \times 2 \\ \hline \end{array}$

2. $\begin{array}{r} 16 \\ \times 4 \\ \hline \end{array}$

3. $\begin{array}{r} 45 \\ \times 5 \\ \hline \end{array}$

4. $\begin{array}{r} 41 \\ \times 4 \\ \hline \end{array}$

5. $\begin{array}{r} 28 \\ \times 5 \\ \hline \end{array}$

6. $\begin{array}{r} 37 \\ \times 3 \\ \hline \end{array}$

7. $\begin{array}{r} 27 \\ \times 4 \\ \hline \end{array}$

8. $\begin{array}{r} 81 \\ \times 5 \\ \hline \end{array}$

9. $\begin{array}{r} 90 \\ \times 3 \\ \hline \end{array}$

10. $\begin{array}{r} 65 \\ \times 8 \\ \hline \end{array}$

11. $\begin{array}{r} 56 \\ \times 2 \\ \hline \end{array}$

12. $\begin{array}{r} 43 \\ \times 9 \\ \hline \end{array}$

13. $\begin{array}{r} 84 \\ \times 4 \\ \hline \end{array}$

14. $\begin{array}{r} 52 \\ \times 7 \\ \hline \end{array}$

15. $\begin{array}{r} 63 \\ \times 8 \\ \hline \end{array}$

16. $\begin{array}{r} 98 \\ \times 3 \\ \hline \end{array}$

17. $\begin{array}{r} 21 \\ \times 9 \\ \hline \end{array}$

18. $\begin{array}{r} 79 \\ \times 2 \\ \hline \end{array}$

19. $\begin{array}{r} 11 \\ \times 3 \\ \hline \end{array}$

20. $\begin{array}{r} 22 \\ \times 5 \\ \hline \end{array}$

21. $\begin{array}{r} 53 \\ \times 4 \\ \hline \end{array}$

22. $\begin{array}{r} 43 \\ \times 6 \\ \hline \end{array}$

23. $\begin{array}{r} 51 \\ \times 3 \\ \hline \end{array}$

24. $\begin{array}{r} 24 \\ \times 7 \\ \hline \end{array}$

25. $\begin{array}{r} 45 \\ \times 2 \\ \hline \end{array}$

26. $\begin{array}{r} 67 \\ \times 7 \\ \hline \end{array}$

27. $\begin{array}{r} 81 \\ \times 6 \\ \hline \end{array}$

28. $\begin{array}{r} 60 \\ \times 5 \\ \hline \end{array}$

29. $\begin{array}{r} 79 \\ \times 8 \\ \hline \end{array}$

30. $\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$

Solve each story problem.

31. Mr. Williams is planting pear trees. He plants 16 rows. Each row has 8 trees. How many trees did he plant ?
32. Model airplane kits have 24 pieces in them. Mark buys 7 kits. How many airplane pieces does Mark have ?
33. A building has 38 floors. Each floor has 9 offices. How many offices are in the building ?
34. Candy is 79 cents a kilogram. How much will Nancy have to pay for 6 kilograms of candy ?
35. Mike collects coins. Each card contains 64 coins. Mike has 5 cards filled. How many coins does he have ?

31. 128, 35. 108

8. 192, 9. 510, 10. 250, 11. 115, 15. 381

Reflected answers, Set 41: 1. 94, 5. 94, 3. 352, 4. 164, 2. 140

Find the products.

$$\begin{array}{r} 1. \ 19 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \ 62 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \ 35 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \ 13 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \ 16 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \ 22 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \ 29 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \ 43 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \ 78 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \ 13 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \ 32 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \ 34 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \ 13 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \ 24 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \ 32 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \ 63 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \ 99 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \ 54 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \ 63 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \ 76 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \ 67 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \ 46 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \ 53 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \ 77 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \ 98 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \ 39 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \ 55 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \ 80 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \ 39 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \ 79 \\ \times 9 \\ \hline \end{array}$$

Solve each story problem.

31. Nancy delivers 78 papers a day. How many papers does she deliver in 7 days?
32. There are 24 hours in one day. How many hours are in 6 days?
33. There are 48 jars of baby food in a case. Mrs. Fong bought 9 cases. How many jars did she buy?
34. A school bus can carry 68 children. How many children can ride in 8 buses this size?
35. During his vacation trip, Mr. Raymond drove his car an average of 92 kilometres per hour. He drove for 4 hours on Friday and 5 hours on Saturday. How far did Mr. Raymond drive?

31. 546, 35. 144

8. 88, 1. 114, 8. 301, 3. 534, 10. 38, 11. 180, 15. 136

Reflected answers, Set 42: 1. 38, 5. 548, 3. 102, 4. 25, 2. 35

Find each product.

1. $\begin{array}{r} 47 \\ \times 2 \\ \hline \end{array}$

2. $\begin{array}{r} 56 \\ \times 3 \\ \hline \end{array}$

3. $\begin{array}{r} 75 \\ \times 5 \\ \hline \end{array}$

4. $\begin{array}{r} 86 \\ \times 4 \\ \hline \end{array}$

5. $\begin{array}{r} 93 \\ \times 4 \\ \hline \end{array}$

6. $\begin{array}{r} 76 \\ \times 3 \\ \hline \end{array}$

7. $\begin{array}{r} 88 \\ \times 7 \\ \hline \end{array}$

8. $\begin{array}{r} 96 \\ \times 8 \\ \hline \end{array}$

9. $\begin{array}{r} 47 \\ \times 6 \\ \hline \end{array}$

10. $\begin{array}{r} 52 \\ \times 9 \\ \hline \end{array}$

11. $\begin{array}{r} 61 \\ \times 8 \\ \hline \end{array}$

12. $\begin{array}{r} 78 \\ \times 7 \\ \hline \end{array}$

13. $\begin{array}{r} 42 \\ \times 5 \\ \hline \end{array}$

14. $\begin{array}{r} 65 \\ \times 8 \\ \hline \end{array}$

15. $\begin{array}{r} 82 \\ \times 3 \\ \hline \end{array}$

16. $\begin{array}{r} 97 \\ \times 2 \\ \hline \end{array}$

17. $\begin{array}{r} 94 \\ \times 7 \\ \hline \end{array}$

18. $\begin{array}{r} 58 \\ \times 4 \\ \hline \end{array}$

19. $\begin{array}{r} 74 \\ \times 6 \\ \hline \end{array}$

20. $\begin{array}{r} 83 \\ \times 4 \\ \hline \end{array}$

21. $\begin{array}{r} 86 \\ \times 9 \\ \hline \end{array}$

22. $\begin{array}{r} 71 \\ \times 6 \\ \hline \end{array}$

23. $\begin{array}{r} 88 \\ \times 8 \\ \hline \end{array}$

24. $\begin{array}{r} 49 \\ \times 7 \\ \hline \end{array}$

25. $\begin{array}{r} 38 \\ \times 8 \\ \hline \end{array}$

26. $\begin{array}{r} 92 \\ \times 6 \\ \hline \end{array}$

27. $\begin{array}{r} 79 \\ \times 9 \\ \hline \end{array}$

28. $\begin{array}{r} 97 \\ \times 2 \\ \hline \end{array}$

29. $\begin{array}{r} 65 \\ \times 4 \\ \hline \end{array}$

30. $\begin{array}{r} 87 \\ \times 5 \\ \hline \end{array}$

Solve each story problem.

31. The assembly hall has 78 rows of seats. There are 9 seats in each row. How many persons can sit in the hall?
32. There are 8 rows of bricks in a wall. Each row contains 98 bricks. How many bricks are in the wall?
33. Paper costs 89 cents a tablet. Pens cost 29 cents each. How much do 7 tablets and 4 pens cost?
34. The basketball team practices 85 minutes on Monday and Wednesday. They practice 75 minutes on Tuesday, Thursday, and Friday. How many minutes does the team practice each week?
35. Mike builds bookcases with 6 shelves. Each shelf holds 16 books. How many books can be put in 8 bookcases?

31. 702, 35. 184

e. 558, 1. 640, 8. 108, 9. 585, 10. 408, 11. 488, 15. 240

Reflected answers, Set 43: 1. 24, 5. 108, 3. 312, 4. 344, 2. 315

Find the products.

1.
$$\begin{array}{r} 413 \\ \times 3 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 525 \\ \times 2 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 334 \\ \times 4 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 242 \\ \times 5 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 453 \\ \times 3 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 264 \\ \times 2 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 563 \\ \times 9 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 652 \\ \times 3 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 835 \\ \times 8 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 496 \\ \times 7 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 741 \\ \times 6 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 416 \\ \times 4 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 123 \\ \times 2 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 564 \\ \times 3 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 345 \\ \times 4 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 153 \\ \times 5 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 254 \\ \times 6 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 347 \\ \times 4 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 243 \\ \times 3 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 563 \\ \times 5 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 674 \\ \times 7 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 755 \\ \times 2 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 486 \\ \times 9 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 327 \\ \times 8 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 1542 \\ \times 2 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 3361 \\ \times 3 \\ \hline \end{array}$$

27.
$$\begin{array}{r} 5782 \\ \times 5 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 7954 \\ \times 3 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 1738 \\ \times 3 \\ \hline \end{array}$$

30.
$$\begin{array}{r} 2138 \\ \times 5 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 3279 \\ \times 6 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 4960 \\ \times 9 \\ \hline \end{array}$$

33.
$$\begin{array}{r} 4189 \\ \times 5 \\ \hline \end{array}$$

34.
$$\begin{array}{r} 7498 \\ \times 6 \\ \hline \end{array}$$

35.
$$\begin{array}{r} 5276 \\ \times 7 \\ \hline \end{array}$$

36.
$$\begin{array}{r} 1556 \\ \times 8 \\ \hline \end{array}$$

Solve each story problem.

37. A certain truck company allows their truckers to drive 575 kilometres per day. How far can one trucker drive in 6 days?

38. The average weight of each lineman on a certain professional football team is 119 kilograms. There are 7 men in the line. How much does the line weigh?

39. The 9 children in the Tiger Club collected paper for a paper drive. Each child collected 108 kilograms of paper per week. The drive lasted 6 weeks. How many kilograms of paper were collected by the Tiger Club?

2' 1320' 0' 258' 52' 3084' 50' 10 083' 51' 58 010' 58' 53 805
 Reflected answers, Set 44: 1' 1530' 5' 1020' 3' 1330' 4' 1510'

Find the products.

- | | | | | |
|-----------------|------------------|-------------------|--------------------|--------------------|
| 1. 7×9 | 5. 7×4 | 9. 3×40 | 13. 90×2 | 17. 200×3 |
| 2. 8×6 | 6. 20×6 | 10. 7×50 | 14. 30×7 | 18. 100×4 |
| 3. 3×5 | 7. 40×8 | 11. 8×10 | 15. 70×6 | 19. 700×6 |
| 4. 2×9 | 8. 7×70 | 12. 9×80 | 16. 800×7 | 20. 8×900 |

Find the quotients.

- | | | | | |
|-----------------|------------------|------------------|-------------------|-------------------|
| 21. $72 \div 8$ | 25. $30 \div 5$ | 29. $180 \div 2$ | 33. $300 \div 6$ | 37. $5400 \div 9$ |
| 22. $64 \div 8$ | 26. $560 \div 7$ | 30. $210 \div 7$ | 34. $400 \div 5$ | 38. $1000 \div 5$ |
| 23. $63 \div 7$ | 27. $270 \div 3$ | 31. $480 \div 6$ | 35. $60 \div 3$ | 39. $2800 \div 7$ |
| 24. $24 \div 6$ | 28. $180 \div 3$ | 32. $360 \div 4$ | 36. $2100 \div 3$ | 40. $6300 \div 9$ |

Find the missing factors.

- | | | | |
|------------------------|------------------------|-------------------------|-------------------------|
| 41. $5 \times n = 35$ | 46. $8 \times n = 320$ | 51. $2 \times n = 1000$ | 56. $n \times 5 = 1500$ |
| 42. $n \times 2 = 16$ | 47. $n \times 5 = 450$ | 52. $n \times 6 = 5400$ | 57. $n \times 7 = 4200$ |
| 43. $6 \times n = 18$ | 48. $7 \times n = 70$ | 53. $9 \times n = 6300$ | 58. $6 \times n = 4200$ |
| 44. $n \times 9 = 36$ | 49. $n \times 8 = 640$ | 54. $n \times 4 = 2800$ | 59. $n \times 2 = 1400$ |
| 45. $n \times 7 = 280$ | 50. $3 \times n = 150$ | 55. $n \times 9 = 3600$ | 60. $9 \times n = 7200$ |

Find the missing quotients.

- | | | | |
|----------------------|----------------------|-----------------------|-----------------------|
| 61. $48 \div 6 = n$ | 66. $270 \div 3 = n$ | 71. $60 \div 2 = n$ | 76. $3200 \div 4 = n$ |
| 62. $20 \div 4 = n$ | 67. $210 \div 7 = n$ | 72. $120 \div 3 = n$ | 77. $1500 \div 5 = n$ |
| 63. $16 \div 8 = n$ | 68. $360 \div 9 = n$ | 73. $4800 \div 6 = n$ | 78. $2400 \div 3 = n$ |
| 64. $56 \div 7 = n$ | 69. $300 \div 5 = n$ | 74. $4900 \div 7 = n$ | 79. $5600 \div 8 = n$ |
| 65. $120 \div 2 = n$ | 70. $320 \div 8 = n$ | 75. $4500 \div 9 = n$ | 80. $8100 \div 9 = n$ |

21. 200' 22. 300' 23. 8' 24. 80' 25. 30' 26. 800

27. 3' 28. 2' 29. 80' 30. 20' 31. 800' 32. 1' 33. 40'

Reflected answers, Set 45: 1. 83' 2. 58' 3. 150' 4. 180' 5. 600'

Set 46*For use with page 289*

Find the quotients.

- | | | | | |
|-----------------|------------------|------------------|------------------|------------------|
| 1. $36 \div 2$ | 10. $168 \div 7$ | 19. $117 \div 3$ | 28. $296 \div 8$ | 37. $336 \div 8$ |
| 2. $48 \div 4$ | 11. $39 \div 3$ | 20. $162 \div 6$ | 29. $153 \div 3$ | 38. $279 \div 9$ |
| 3. $96 \div 8$ | 12. $74 \div 2$ | 21. $272 \div 8$ | 30. $232 \div 4$ | 39. $364 \div 7$ |
| 4. $72 \div 6$ | 13. $189 \div 9$ | 22. $140 \div 5$ | 31. $265 \div 5$ | 40. $504 \div 7$ |
| 5. $65 \div 5$ | 14. $108 \div 4$ | 23. $210 \div 5$ | 32. $180 \div 4$ | 41. $336 \div 4$ |
| 6. $77 \div 7$ | 15. $174 \div 6$ | 24. $287 \div 7$ | 33. $252 \div 6$ | 42. $456 \div 6$ |
| 7. $52 \div 4$ | 16. $175 \div 7$ | 25. $387 \div 9$ | 34. $203 \div 7$ | 43. $364 \div 4$ |
| 8. $88 \div 4$ | 17. $258 \div 6$ | 26. $198 \div 9$ | 35. $333 \div 9$ | 44. $376 \div 8$ |
| 9. $110 \div 5$ | 18. $132 \div 4$ | 27. $368 \div 8$ | 36. $112 \div 2$ | 45. $469 \div 7$ |

31' 45' 38' 31' 30' 25'

15' 31' 10' 30' 51' 51' 34' 58' 31' 50' 21' 30' 28'

Reflected answers, Set 46: 1' 18' 5' 15' 3' 15' 10' 54' 11' 13'

Set 47*For use with page 291*

Solve each story problem.

- | | |
|--|---|
| 1. 112 players. 8 on each team.
How many teams? | 6. 243 balloons. 9 packs.
How many in each pack? |
| 2. 252 books. 6 shelves.
How many on each shelf? | 7. 228 bottles. 6 per carton.
How many cartons? |
| 3. 85 cents. All nickels.
How many nickels? | 8. 336 seats. 8 rows.
How many in each row? |
| 4. 364 children. 7 per car.
How many cars? | 9. 336 days.
How many weeks? |
| 5. 184 truck tires sold. 4 tires for
each truck. How many trucks? | 10. 639 kilograms of shrimp. 9 kilograms
per carton. How many cartons? |

Reflected answers, Set 47: 1' 14' 5' 45' 0' 51' 1' 38'

Set 48*For use with page 295*

Find the quotients.

- | | | | | | |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 1. $2\overline{)24}$ | 2. $3\overline{)63}$ | 3. $4\overline{)48}$ | 4. $6\overline{)96}$ | 5. $7\overline{)84}$ | 6. $5\overline{)80}$ |
| 7. $3\overline{)78}$ | 8. $5\overline{)75}$ | 9. $7\overline{)98}$ | 10. $4\overline{)144}$ | 11. $2\overline{)88}$ | 12. $3\overline{)138}$ |
| 13. $4\overline{)52}$ | 14. $2\overline{)32}$ | 15. $3\overline{)48}$ | 16. $5\overline{)60}$ | 17. $6\overline{)72}$ | 18. $7\overline{)91}$ |
| 19. $7\overline{)112}$ | 20. $8\overline{)176}$ | 21. $9\overline{)207}$ | 22. $6\overline{)78}$ | 23. $8\overline{)96}$ | 24. $9\overline{)108}$ |
| 25. $2\overline{)108}$ | 26. $4\overline{)92}$ | 27. $6\overline{)204}$ | 28. $3\overline{)171}$ | 29. $4\overline{)272}$ | 30. $5\overline{)235}$ |
| 31. $5\overline{)470}$ | 32. $3\overline{)222}$ | 33. $2\overline{)134}$ | 34. $7\overline{)385}$ | 35. $8\overline{)752}$ | 36. $6\overline{)588}$ |
| 37. $7\overline{)301}$ | 38. $9\overline{)585}$ | 39. $5\overline{)415}$ | 40. $6\overline{)564}$ | 41. $5\overline{)445}$ | 42. $4\overline{)308}$ |
| 43. $8\overline{)368}$ | 44. $6\overline{)342}$ | 45. $4\overline{)384}$ | 46. $7\overline{)483}$ | 47. $8\overline{)312}$ | 48. $9\overline{)666}$ |

0' 10' 52' 24' 58' 53' 51' 34' 58' 21' 58' 08' 30' 41

Reflected answers, Set 48: 1' 15' 5' 51' 3' 15' 4' 10' 2' 15'

Set 49*For use with page 301*

Find the quotients and remainders.

- | | | | | | |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 1. $2\overline{)57}$ | 2. $3\overline{)46}$ | 3. $5\overline{)82}$ | 4. $4\overline{)77}$ | 5. $7\overline{)98}$ | 6. $6\overline{)86}$ |
| 7. $2\overline{)69}$ | 8. $3\overline{)92}$ | 9. $4\overline{)58}$ | 10. $5\overline{)76}$ | 11. $6\overline{)69}$ | 12. $7\overline{)87}$ |
| 13. $5\overline{)235}$ | 14. $2\overline{)146}$ | 15. $5\overline{)478}$ | 16. $6\overline{)379}$ | 17. $7\overline{)598}$ | 18. $4\overline{)192}$ |
| 19. $3\overline{)163}$ | 20. $6\overline{)475}$ | 21. $3\overline{)286}$ | 22. $4\overline{)379}$ | 23. $4\overline{)281}$ | 24. $2\overline{)192}$ |
| 25. $9\overline{)654}$ | 26. $8\overline{)355}$ | 27. $7\overline{)463}$ | 28. $3\overline{)264}$ | 29. $8\overline{)789}$ | 30. $9\overline{)237}$ |
| 31. $5\overline{)142}$ | 32. $2\overline{)173}$ | 33. $3\overline{)274}$ | 34. $8\overline{)274}$ | 35. $5\overline{)385}$ | 36. $7\overline{)496}$ |
| 37. $8\overline{)572}$ | 38. $7\overline{)351}$ | 39. $2\overline{)138}$ | 40. $3\overline{)249}$ | 41. $4\overline{)354}$ | 42. $9\overline{)665}$ |
| 43. $2\overline{)187}$ | 44. $6\overline{)496}$ | 45. $6\overline{)576}$ | 46. $8\overline{)791}$ | 47. $4\overline{)284}$ | 48. $9\overline{)823}$ |

58' 88 H0' 58' 88 H2' 30' 58 H3

2' 14 H0' 0' 14 H5' 52' 15 H0' 58' 44 H3' 51' 00 H1'

Reflected answers, Set 49: 1' 58 H1' 5' 12 H1' 3' 10 H5' 4' 10 H1'

Set 50*For use with page 303*

Find the quotients.

- | | | | | |
|-----------------|-----------------|------------------|------------------|------------------|
| 1. $102 \div 6$ | 5. $243 \div 9$ | 9. $273 \div 3$ | 13. $396 \div 4$ | 17. $260 \div 5$ |
| 2. $92 \div 4$ | 6. $140 \div 5$ | 10. $301 \div 7$ | 14. $434 \div 7$ | 18. $837 \div 9$ |
| 3. $195 \div 3$ | 7. $217 \div 7$ | 11. $423 \div 9$ | 15. $608 \div 8$ | 19. $784 \div 8$ |
| 4. $256 \div 8$ | 8. $384 \div 8$ | 12. $402 \div 6$ | 16. $170 \div 2$ | 20. $320 \div 5$ |

Find the quotients and remainders.

- | | | | | |
|------------------|------------------|------------------|------------------|------------------|
| 21. $77 \div 3$ | 24. $91 \div 2$ | 27. $270 \div 4$ | 30. $715 \div 9$ | 33. $699 \div 9$ |
| 22. $87 \div 6$ | 25. $275 \div 8$ | 28. $428 \div 8$ | 31. $517 \div 7$ | 34. $775 \div 8$ |
| 23. $190 \div 7$ | 26. $192 \div 5$ | 29. $259 \div 3$ | 32. $538 \div 6$ | 35. $438 \div 5$ |

Find the sums, differences, products, and quotients.

- | | | | | |
|--|--|--|--|--|
| 36. $\begin{array}{r} 654 \\ -276 \\ \hline \end{array}$ | 37. $\begin{array}{r} 9 \overline{)477} \end{array}$ | 38. $\begin{array}{r} 364 \\ \times 7 \\ \hline \end{array}$ | 39. $\begin{array}{r} 7 \overline{)448} \end{array}$ | 40. $\begin{array}{r} 719 \\ -263 \\ \hline \end{array}$ |
| 41. $\begin{array}{r} 923 \\ -357 \\ \hline \end{array}$ | 42. $\begin{array}{r} 8 \overline{)596} \end{array}$ | 43. $\begin{array}{r} 539 \\ +885 \\ \hline \end{array}$ | 44. $\begin{array}{r} 9 \overline{)396} \end{array}$ | 45. $\begin{array}{r} 396 \\ \times 6 \\ \hline \end{array}$ |
| 46. $\begin{array}{r} 466 \\ \times 8 \\ \hline \end{array}$ | 47. $\begin{array}{r} 6 \overline{)564} \end{array}$ | 48. $\begin{array}{r} 927 \\ +878 \\ \hline \end{array}$ | 49. $\begin{array}{r} 4 \overline{)373} \end{array}$ | 50. $\begin{array}{r} 832 \\ -578 \\ \hline \end{array}$ |
| 51. $\begin{array}{r} 394 \\ +934 \\ \hline \end{array}$ | 52. $\begin{array}{r} 8 \overline{)440} \end{array}$ | 53. $\begin{array}{r} 971 \\ -796 \\ \hline \end{array}$ | 54. $\begin{array}{r} 3 \overline{)261} \end{array}$ | 55. $\begin{array}{r} 356 \\ \times 8 \\ \hline \end{array}$ |

Solve each story problem.

56. Nancy has 185 stamps. She places 8 on each page of her book.
How many pages are full? How many more stamps are needed to fill the next page?

30' 318' 31' 23' 38' 5248' 30' 04' 40' 420

51' 52 85' 54' 42 81' 51' 01 85' 30' 10 84' 33' 11 80'

Reflected answers, Set 50: 1' 11' 2' 51' 0' 01' 13' 00' 11' 25'

Books to Explore

Adler, Irving. *The Giant Golden Book of Mathematics.*

New York, Golden Press, 1960.

(Available from Whitman Golden Ltd., Cambridge, Ontario)

Have you ever wondered how a tree grows or why a volcano is shaped as it is or what makes a card trick work? This colorful book answers these and many other questions, through exploring the world of mathematics. You'll find all kinds of exciting ideas about numbers and what they mean in our daily lives. Here are just a few of the interesting topics:

How the Mayan Indians wrote 100	13
The puzzle of the King's reward	21
Bridges, planets and whispering galleries	54
Why a navigator needs a clock	62

Brindze, Ruth. *The Story of Our Calendar.*

New York, Vanguard, 1949.

(Available from The Copp Clark Publishing Co., Toronto)

Men did not always have calendars to tell what day of the month it was. In fact, they did not always know about months. It took thousands of years to develop the calendar as we know it, and each version presented new problems. This book tells you:

The difference between sun years and moon years	8
Who decreed the first leap year	36
The year the calendar was set back 11 whole days	47

Carona, Philip. *Things That Measure.*

Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1962.

(Available from Prentice-Hall of Canada Ltd., Scarborough, Ontario)

Many pictures and diagrams help the author tell you about different ways to measure things. He covers a wide range of subjects, including:

Using tobacco for money	15
Who invented the first watch	47
Weather instruments	50-55

Smith, George O. *Mathematics: The Language of Science.*

New York, G. P. Putnam's Sons, 1961.

(Available from Longman Canada Ltd., Don Mills, Ontario)

Interesting stories show how mathematical language is a handy tool for scientists. You will learn how the first men kept track of their possessions, how Roman businessmen struggled with Roman numerals, how the Babylonians discovered place value, and how Copernicus had trouble convincing people that the sun was the centre of the universe.

Other stories you might enjoy reading in this book are:

The discovery of nothing	23
Mr. Newton's apple	47-49
Investigating a Mobius strip	63-64

Some shorter books to look for in your library are listed below.

Adler, Irving and Ruth. *Numbers Old and New.*

New York, John Day, 1960.
(Longman Canada Ltd., Don Mills, Ont.)

This book explains the counting methods of Australian natives and Mayan Indians, and the fractions used by Egyptians and Greeks. For fun, read the chapters about lucky and unlucky numbers, number tricks, and numbers in nature.

Bendick, Jeanne. *First Book of Time.*

New York, Watts, 1963.
(Grolier Limited, Toronto)

Excellent pictures help tell the story of time and how to measure it. All kinds of clocks are described—from sun dials and water clocks to the atomic clock and clocks in your body.

Bendick, Jeanne, and Levin, Marcia O. *Take a Number.*

New York, Whittlesey House, 1961.
(McGraw-Hill Ryerson, Scarborough, Ontario)

Stories and puzzles explain different ways of counting with numbers. Some are very easy, like counting on your fingers; others are more complicated, like using a computer.

Charosh, Mannis. *Straight Lines, Parallel Lines, Perpendicular Lines.*

New York, Thomas Y. Crowell, 1970.
(Fitzhenry & Whiteside Ltd., Don Mills, Ont.)

By using a piece of string and a checkerboard, you can explore the world of straight, parallel and perpendicular lines.

Clarke, Mollie. *Beads. A Group of Children. Numbers. Dominoes. What is Missing? 20 Sticks. Houses. The Calendar. The Piggy Bank. A Box of Crayons. Sweets. Cakes and Candles. What Is Inside? Shapes. Buttons. A Dozen Eggs. Symmetrical Shapes.*

Newton, Massachusetts, Selective Educational Equipment, Inc.

There should be something here to interest you.

Friskey, Margaret. *The Mystery of the Farmer's Three Fives.*

Chicago, Children's Press, 1963.
(Scholars Choice Limited, Stratford, Ont.)

A book about animals that compares groups in the barnyard. You'll enjoy the mystery.

Hine, Al. *Money Round the World.*

New York, Harcourt, Brace & World, Inc., 1963.
(Longman Canada Ltd., Don Mills, Ont.)

All about trading and money, from stones to metal coins and paper money.

Hoban, Tana. *Shapes and Things.*

New York, Macmillan Co., 1970.
(Collier-Macmillan Canada Ltd., Don Mills, Ont.)

The author shows simple, everyday objects in photograms—pictures made without a camera. This is a real treat for your eyes.

Hutchins, Pat. *Clocks and More Clocks.*

New York, Macmillan, 1970.

(Collier-Macmillan Canada Ltd., Don Mills, Ont.)

Have you ever tried to check the time on three different clocks and found three different answers? Look through this picture book for fun with clocks.

Jacobs, Leland B. *Delight in Number.*

New York, Holt, Rinehart and Winston, Inc., 1964.

(Holt, Rinehart and Winston of Canada Ltd., Toronto)

These happy poems about groups of objects use many number words.

Kettlekamp, Larry. *Spirals.*

Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.

(Prentice-Hall of Canada Ltd., Scarborough, Ontario)

An enjoyable look at spirals—some are in nature, some man-made.

Linn, Charles. *Estimation.*

New York, Thomas Y. Crowell, 1970.

(Fitzhenry & Whiteside, Don Mills, Ont.)

Interesting experiments and activities help you improve your estimating skills.

Massoglia, Elinor. *Fun-Time Paper Folding.*

Chicago, Children's Press, 1959.

(Scholars Choice Limited, Stratford, Ont.)

You would be surprised how many different things you can make by folding a single piece of paper. This book gives directions, and there is no cutting or pasting.

Rhodes, Dorothy. *How To Read a City Map.*

Chicago, Elk Grove Press, Inc., 1967.

(Griffin House, Toronto)

Through pictures you can learn to read a map. How do you locate rivers, railroads, airports, historical landmarks, hospitals, roads, and government buildings on a map?

Russell, Solveig P. *One, Two, Three and Many: A First Look At Numbers.*

New York, Walck, 1970.

(Oxford University Press, Don Mills, Ont.)

This book tells you all about the history of numbers and counting.

Sitomer, Mindel and Harry. *What Is Symmetry?*

New York, Thomas Y. Crowell, 1970.

(Fitzhenry & Whiteside Ltd., Don Mills, Ontario)

With the help of the alligators, you can locate symmetries in nature and in man-made objects.

Savastava, Jane. *Weighing and Balancing.*

New York, Thomas Y. Crowell, 1970.

(Fitzhenry & Whiteside, Don Mills, Ont.)

This book shows you how to make a simple balance.

Whitney, David C. *The Easy Book of Multiplication.*

New York, Franklin Watts, Inc., 1969.

(Grolier Limited, Toronto)

This book will help you understand the process of multiplication with examples to show the facts.

addend Any one of a set of numbers to be added.
In the equation $4 + 5 = 9$, the numbers 4 and 5 are addends.

addition An operation that combines a first number and a second number to give exactly one number. The two numbers are called addends, and the one number which is the result of combining the two numbers is called the sum of the addends.

angle Two rays from a single point.



approximation One number is an approximation of another number if the first number is suitably "close" (according to context) to the other number.

area The area of a closed figure or region is the measure of that region as compared to a given selected region called the unit, usually a square region in the case of area.

borrow A commonly used term for the regrouping process involved in certain types of subtraction.

Example:

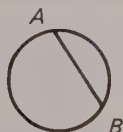
$$\begin{array}{r} 3 \ 13 \\ -1 \ 7 \\ \hline \end{array} \rightarrow \begin{array}{r} 3 \ 0 \\ -1 \ 0 \\ \hline 2 \ 0 \end{array} \quad \begin{array}{r} 1 \ 3 \\ -7 \\ \hline \end{array} \rightarrow \begin{array}{r} 4 \ 3 \\ -1 \ 7 \\ \hline 2 \ 6 \end{array}$$

carry A commonly used term for the regrouping that is involved in addition.

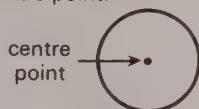
Example:
$$\begin{array}{r} 57 \\ +26 \\ \hline 83 \end{array} \rightarrow \begin{array}{r} 50 + 7 \\ +20 + 6 \\ \hline 70 + 13 = 83 \end{array}$$

centimetre A unit of length. One centimetre is $\frac{1}{100}$ metre.

chord A line segment that has its endpoints on a given circle.



circle A set of all points in a plane which are a specified distance from a given point called the centre or centre point.



compass A device for drawing models of a circle.



co-ordinate Number pair used in graphing.

co-ordinate axes Two number lines intersecting at right angles at 0.

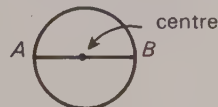
count To name numbers in regular succession.

cube A rectangular prism (box) such that all faces are squares.

diagonal A segment joining two nonadjacent vertices of a polygon. In the figure, the diagonal is segment AB.



diameter A chord that passes through the centre point of the circle.



difference The number resulting from the subtraction operation.

digits The basic Hindu-Arabic symbols used to write numerals. In the base-ten system, these are the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

division An operation related to multiplication as illustrated:

$$3 \times 4 = 12 \quad \begin{array}{l} \rightarrow 12 \div 3 = 4 \\ \rightarrow 12 \div 4 = 3 \end{array}$$

divisor In the problem $33 \div 7$, 7 is called the divisor.

Example:

$$\begin{array}{r} 4 \\ 7 \overline{)33} \\ \underline{28} \\ 5 \end{array}$$

divisor \rightarrow

empty set A set that has no objects in it.

equality (equals; or =) A mathematical relation of being exactly the same.

equation A mathematical sentence involving the use of the equality symbol. Examples: $5 + 4 = 9$; $7 + \square = 8$; $n + 3 = 7$.

equivalent fractions Two fractions are equivalent when it can be shown that they each can be used to represent the same amount of a given object. Also, two fractions are equivalent if these two products are the same:

$$\frac{3}{4} \times \frac{6}{8} \rightarrow 4 \times 6 \rightarrow 24$$

$$\frac{3}{4} \times \frac{8}{8} \rightarrow 3 \times 8 \rightarrow 24$$

equivalent sets Two sets that may be placed in a one-to-one correspondence.

estimate To find an approximation for a given number. (Sometimes a sum, a product, etc.)

even numbers The whole-number multiples of 2 (0, 2, 4, 6, 8, 10, 12, ...).

factor See multiplication. The equation $6 \times 7 = 42$ illustrates that both 6 and 7 are factors of 42.

fraction A symbol for a rational number, usually written $\frac{2}{3}$, $\frac{3}{4}$, $\frac{1}{2}$, and so on.

graph (1) A set of points associated with a given set of numbers or set of number pairs. (2) A picture used to illustrate a given collection of data. The data might be pictured in the form of a bar graph, a circle graph, a line graph, or a pictograph. (3) To draw the graph of.

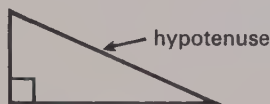
greater than ($>$) One of the two basic inequality relations. Examples: $8 > 5$, $28 > 25$, $80 > 50$.

grouping principle (associative principle) When adding (or multiplying) three numbers, you can change the grouping and the sum (or product) is the same.

$$\begin{aligned}\text{Examples: } 2 + (8 + 6) &= (2 + 8) + 6 \\ 3 \times (4 \times 2) &= (3 \times 4) \times 2\end{aligned}$$

hexagon A six-sided polygon.

hypotenuse The side opposite the right angle in a right triangle.



inequality ($<$, \neq , $>$) In arithmetic, a relation indicating that two numbers are not the same.

legs of a right triangle The two sides of a right triangle other than the hypotenuse.



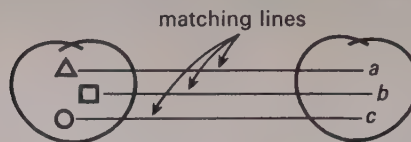
length (1) A number indicating the measure of one segment with respect to another segment, called the unit. (2) Sometimes used to denote one dimension (usually the greater) of a rectangle.

less than ($<$) One of the two basic inequality relations. Examples: $5 < 8$, $25 < 28$, $50 < 80$.

line A line is a set of points that "goes on and on" in both directions. There is only one line through any two points.

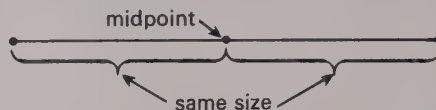
line segment See segment.

matching lines Lines used to indicate the correspondence between the objects in two sets.



measure (1) A number indicating the relation between a given object and a suitable unit. (2) The process of finding the number described in (1).

midpoint A point that divides a line segment into two parts of the same size.



minus ($-$) Used to indicate the subtraction operation, as in $7 - 3 = 4$ (read, "7 minus 3 equals 4").

multiple A first number is a multiple of a second number if there is a whole number that multiplies by the second number to give the first number.

Example: 24 is a multiple of 6 since $4 \times 6 = 24$.

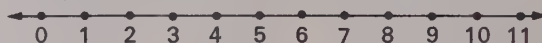
multiplication An operation that combines a first number and a second number to give exactly one number. The two numbers are called factors, and the one number which is a result of combining the two numbers is called the product of the two numbers.

multiplication-addition principle (distributive principle) This principle is sometimes described in terms of "breaking apart" a number before multiplying. Example: $6 \times (20 + 4) = (6 \times 20) + (6 \times 4)$

negative number If a number adds to a whole number to give 0, it is a negative number.

$$\begin{aligned}\text{For example: } 5 + -5 &= 0 \\ 19 + -19 &= 0\end{aligned}$$

number line A line on which specified points are given number labels or names. The following example illustrates the whole-number line.



number pair Any pair of numbers. In this book, usually a pair of whole numbers.

numeral A symbol for a number.

odd number Any whole number that is not even.

one principle (for multiplication) Any number multiplied by 1 is that same number.

one-to-one correspondence A one-to-one correspondence exists between two sets when the elements of one can be matched with the elements of the other in such a way that each element of the first set is matched with exactly one element of the second set and each element of the second set is matched with exactly one element of the first set.

order principle (commutative principle) When adding (or multiplying) two numbers, the order of the addends (or factors) does not affect the sum (or product). Examples: $4 + 5 = 5 + 4$, $2 \times 3 = 3 \times 2$.

parallel lines Two lines which lie in the same plane and do not intersect.

parallelogram A quadrilateral with its opposite sides parallel.

parentheses A pair of curved symbols, (), used to indicate grouping or order of performing operations.

Examples:

$$(5 \times 4) - 2 = 18; \quad 5 \times (4 - 2) = 10.$$

pentagon A five-sided polygon.

place value A system used for writing numerals for numbers, using only a definite number of symbols or digits. In the numeral 3257 the 5 stands for 50; in the numeral 36 289 the 6 stands for 6000.

plus (+) Used to indicate the addition operation, as in $4 + 3 = 7$ (read, "4 plus 3 equals 7").

polygon A closed geometric figure made up of line segments.

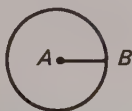
prime number A number greater than 1 whose only factors are itself and 1.

product The result of the multiplication operation. In $6 \times 7 = 42$, 42 is the product of 6 and 7.

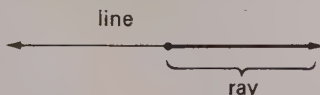
quadrilateral A four-sided polygon.

quotient The number (other than the remainder) that is the result of the division operation. It may be thought of as a factor in a multiplication equation.

radius (1) Any segment from the centre point to a point on the circle. (2) The distance from the centre point to any point on the circle.



ray The heavy part of the line shows a ray.



rectangle A quadrilateral that has four right angles.

regrouping A method of handling place value symbols in adding or subtracting numbers.

remainder

Example:

$$\begin{array}{r} 6 \\ 7 \overline{)47} \\ \underline{42} \\ 5 \end{array}$$

5 ← remainder

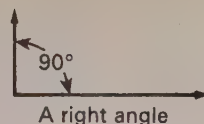
repeated addition Finding the sum of a set of numbers, each of which is the same.

Example: $5 + 5 + 5 + 5$

repeated subtraction Starting with a number and repeatedly subtracting the same given number from each difference that is obtained.

rhombus A parallelogram with 4 sides of the same size.

right angle An angle that has the measure of 90 degrees.



right triangle A triangle that has one right angle.

Roman numerals Numerals used by the Romans. Used primarily to record numbers rather than for computing. Examples: IV, IX, XIV.

segment Two points on a line and all the points on that line that are between the two points.

sequence A collection or set of numbers given in a specific order. Such numbers are commonly given according to some rule or pattern.

set A group or collection of objects.

skip count To count by multiples of a given number. Example: Counting by fives — 0, 5, 10, 15, 20, ...

solution The number or numbers which result from solving an equation or a given problem.

solve To find the number or numbers which, when substituted for the variable or placeholder, make the given equation true.

square A quadrilateral that has four right angles and four sides that are the same length.

subtraction An operation related to addition as illustrated:

$$\begin{array}{l} 7 + 8 = 15 \\ \swarrow \searrow \\ 15 - 8 = 7 \\ 15 - 7 = 8 \end{array}$$

sum A result obtained by adding any set of numbers is referred to as the sum of the numbers.

symmetric figure A figure that can be folded in half so the two halves match.

times (×) Used to indicate the multiplication operation, as in $3 \times 4 = 12$ (read, "3 times 4 equals 12").

triangle A three-sided polygon.

unit An amount or quantity adopted as a standard of measurement.

vertex The point that the two rays of an angle have in common.



volume The measure, obtained using an appropriate unit (usually a cube), of the interior region of a space figure.

whole number Any number in the set. $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, \dots\}$.

zero principle (for addition) Any number added to zero is that same number.

Tables of Measures

LENGTH	
10 millimetres (mm) = 1 centimetre (cm)	1000 millimetres = 1 metre
10 centimetres = 1 decimetre (dm)	100 centimetres = 1 metre
10 decimetres = 1 metre (m)	10 decimetres = 1 metre
1000 metres = 1 kilometre (km)	1 / 1000 kilometres = 1 metre

TIME	
60 seconds (s) = 1 minute (min)	52 weeks = 1 year
60 minutes = 1 hour (h)	12 months (mo) = 1 year
24 hours = 1 day	365 days = 1 year
7 days = 1 week (wk)	366 days = 1 leap year

CAPACITY
10 millilitres (ml) = 1 centilitre (cl)
10 centilitres = 1 decilitre (dl)
10 decilitres = 1 litre (l)
1000 litres = 1 kilolitre (kl)

WEIGHT
1000 grams (g) = 1 kilogram (kg)
1000 kilograms = 1 tonne (t)

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